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The Bennett Site

By J. V. Wright and
J. E. Anderson

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THE BENNETT SITE



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THE BENNETT SITE

*by J. V. Wright and
J. E. Anderson*

Ottawa, 1969

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PART I

ARCHAEOLOGY OF THE BENNETT SITE

by

J. V. Wright

Résumé

Le gisement Bennett est un village palissadé de deux acres et demie à trois acres qui a été occupé au milieu du XIII^e siècle. Dans l'enceinte de la double palissade se trouvaient de longues maisons, des sépultures, des fosses et d'autres particularités.

Sur les sept formes d'habitations proposées, seulement trois sont clairement démontrables. La première construction, la seule maison évidente qui soit exposée en entier, semble, à presque tous les points de vue, la forme typique des maisons de l'emplacement. Elle mesurait 55 pieds sur 22.5; elle était rectangulaire et les deux extrémités étaient arrondies. Mais la longueur originale de la maison était de 40 pieds; on y avait ajouté un agrandissement de 15 pieds. Il y avait manifestement une entrée à un bout de la maison. Deux rangées de gros poteaux intérieurs distants d'environ 4 pieds 8 pouces étaient parallèles aux deux murs de la maison; l'intérieur de la maison se trouvait probablement entre ces poteaux qui supportaient la plate-forme où l'on se couchait. Une rangée de petits poteaux extérieurs s'étendait à partir d'un coin de la maison et longeait le mur sur une distance de 37.5 pieds. On suppose que cette rangée représente les restes d'une construction ajoutée en appentis à la maison, peut-être un bûcher. Il n'y avait qu'un seul foyer, au centre, et sur les 35 fosses à l'intérieur de la maison, 11 étaient certainement alignées d'un côté du foyer. Un trait peu commun de la première structure consiste en la présence de huit lieux de sépulture à l'intérieur. Si l'on excepte qu'elles sont en général plus courtes, les maisons du gisement Bennett font clairement prévoir les longues maisons que les Iroquois ont construites plus tard.

Les 13 lieux de sépulture montraient diverses formes d'inhumation: corps pliés, liés ou démembrés. Ces deux dernières techniques de sépulture laissent prévoir le mode d'ensevelissement dans des ossuaires que la collectivité iroquoise de l'Ontario a adopté plus tard; il en est de même de l'absence d'objets placés dans les cercueils et du nombre excédentaire d'os qu'on y trouvait. En plus des sépultures humaines, on a trouvé une seule sépulture de chien démembré et désarticulé.

Sur les 243 fosses qu'on a découvertes, 85 p. cent avaient au plus 30 pouces de diamètre ou de longueur. La plupart des petites fosses étaient circulaires, en forme de bassins peu profonds, et contenaient très peu de déchets. En règle générale, les grandes fosses renfermaient plus de déchets et deux d'entre elles contenaient des restes mortels. 85 p. cent des petites fosses semblaient appartenir à des maisons.

La double palissade suivait à peu près le profil de 24 pieds de l'emplacement et, quant à sa longueur visible, elle était assez droite, sauf la partie qui faisait face à la pente très douce conduisant à la petite colline sur laquelle se trouve l'emplacement. La palissade formait à cet endroit au moins deux angles pouvant avoir servi de bastions. On a aussi trouvé, en dehors de la palissade, à ce point de défense susceptible de présenter

des faiblesses, des pierres de deux livres ou moins pouvant représenter des projectiles rejetés. Un autre endroit du gisement démontre que parfois la palissade et la maison étaient reliées, comme mesure supplémentaire de défense.

Voici certaines caractéristiques de moindre importance qu'on a relevées: concentrations de pots où des vases d'argile semblent avoir été insérés intentionnellement dans de petites fosses; des foyers (représentés par des zones de sable rougi au feu) qui, sauf une exception, étaient toujours situés à l'intérieur de la maison; et une cachette d'éolithes non terminés.

Les habitants de l'emplacement Bennett vivaient de maïs vitreux du Nord, d'une grande variété d'animaux et, sans doute, de végétaux sauvages. Le cerf de Virginie était de loin l'animal dont on tirait le plus parti. En effet, on a retrouvé à plusieurs reprises des crânes relativement complets de cerfs placés dans des fosses d'une façon qui laissait supposer une cérémonie rituelle. Ces gens mangeaient aussi du chien et une grande variété de poissons.

Cette étude du gisement Bennett permet déjà de relever tous les éléments essentiels de la société iroquoise. Même les objets archéologiques culturels sont typiquement iroquois, les céramiques représentant 90 p. cent de tous les objets façonnés qu'on a retrouvés.

On a dit (Wright 1966) que le peuple du site Bennett et des emplacements de même nature du rameau Pickering ultérieur de cette même région a gagné le sud-ouest et, en cours d'expansion, s'est dispersé et a en partie assimilé la population du rameau Glen Meyer du sud-ouest de l'Ontario méridional. Deux importantes sources de renseignements appuient la théorie de la conquête du rameau Glen Meyer par le rameau Pickering ultérieur. D'abord, il y a la distribution géographique des emplacements du rameau Pickering, de ceux du rameau Glen Meyer et de ceux du sous-stade Uren. Même à l'époque où l'emplacement Bennett était occupé, il semble que le rameau Pickering empiétait déjà sur les prairies du rameau Glen Meyer. C'est ce qu'on pense à cause de la proximité de l'emplacement du village Bennett et de l'emplacement du camp du rameau Glen Meyer par rapport au *King's Forest Park*. Enfin, l'avènement des emplacements du sous-stade Uren, tel que l'emplacement Downpour, au cœur du pays du rameau Glen Meyer, est la preuve du déplacement de ce dernier groupe. Toutefois, il semblerait que ce déplacement n'ait pas été le résultat d'un coup militaire soudain, comme celui qui a détruit les Hurons historiques, mais plutôt d'un empiètement incessant. Cette interprétation s'appuie sur ce qu'on a dit de l'emplacement Uren considéré comme «l'un des dix emplacements situés dans une région de vingt milles carrés qui avaient tous la même culture, et semblent avoir été occupés à la même époque» (Wintemberg 1928: 1). Une telle proximité entre les villages d'un agresseur avait des avantages d'ordre à la fois offensif et défensif.

La deuxième grande source de renseignements qui sert à démontrer la conquête du rameau Glen Meyer par le rameau Pickering consiste en la comparaison détaillée des objets façonnés retrouvés dans les gisements Bennett, Goessens et Uren. Si l'hypothèse de la conquête et de l'assimilation partielle est exacte, le gisement Bennett serait alors moins semblable au gisement Goessens et se rapprocherait davantage du gisement Uren. Toutefois, le gisement Uren devrait maintenant montrer un plus haut degré de ressemblance avec celui de Goessens que n'en démontrent entre

eux les gisements Bennett et Goessens. On appuie ces ressemblances sur les hypothèses suivantes: les gisements Bennett et Goessens sont les produits de deux faits distincts (le rameau Pickering et le rameau Glen Meyer) qui doivent donc avoir très peu de rapport; l'emplacement Uren est le produit direct du rameau Pickering; il aura donc une relation très étroite avec l'emplacement Bennett; et puisqu'il existe des marques de similitude du rameau Glen Meyer dans l'emplacement Uren, résultat direct de la conquête, l'emplacement Uren a donc une relation plus étroite avec l'emplacement Goessens que ce n'était le cas entre les gisements Bennett et Goessens. Les comparaisons entre les trois emplacements soutiennent l'hypothèse des ressemblances, à une exception prévisible (voir tableau 20).

On peut mentionner une troisième preuve, beaucoup moins probante, pour appuyer la théorie de la conquête du rameau Glen Meyer par le rameau Pickering et de sa dispersion ultérieure par ce dernier rameau, c'est-à-dire les données équivoques de la tradition Younge dans le sud-est du Michigan, qu'on peut interpréter comme une preuve de l'adoption de la tradition Younge par les réfugiés du rameau Glen Meyer.

CHAPTER ONE

Introduction

The Bennett site, or AiGx-1 as it is called under the Borden system of site designation (Borden 1952), was first examined by the late W. D. Bell, then of the Geography Department, McMaster University. In the fall of 1961, Dr. J. N. Emerson, of the University of Toronto, carried out an excavation in conjunction with the Iroquoian Conference being held at McMaster University. The excavation disclosed the importance of the site to the interpretation of Ontario Iroquois prehistory and led to the expanded excavation of 1962. Dr. Emerson offered the specimens and field notes from the earlier excavation for incorporation into the present report, but because of the problems involved in integrating two separate excavations that had overlapped to some degree in their areas of examination and because of the relatively small quantity and repetitiousness of the material from 1961, I have decided to use only certain pertinent general findings from that excavation.

The site, which is located on properties owned by Mr. H. R. Ryerse of Burlington and Mr. Peter Teeffe of Kilbride, derives its name from a previous

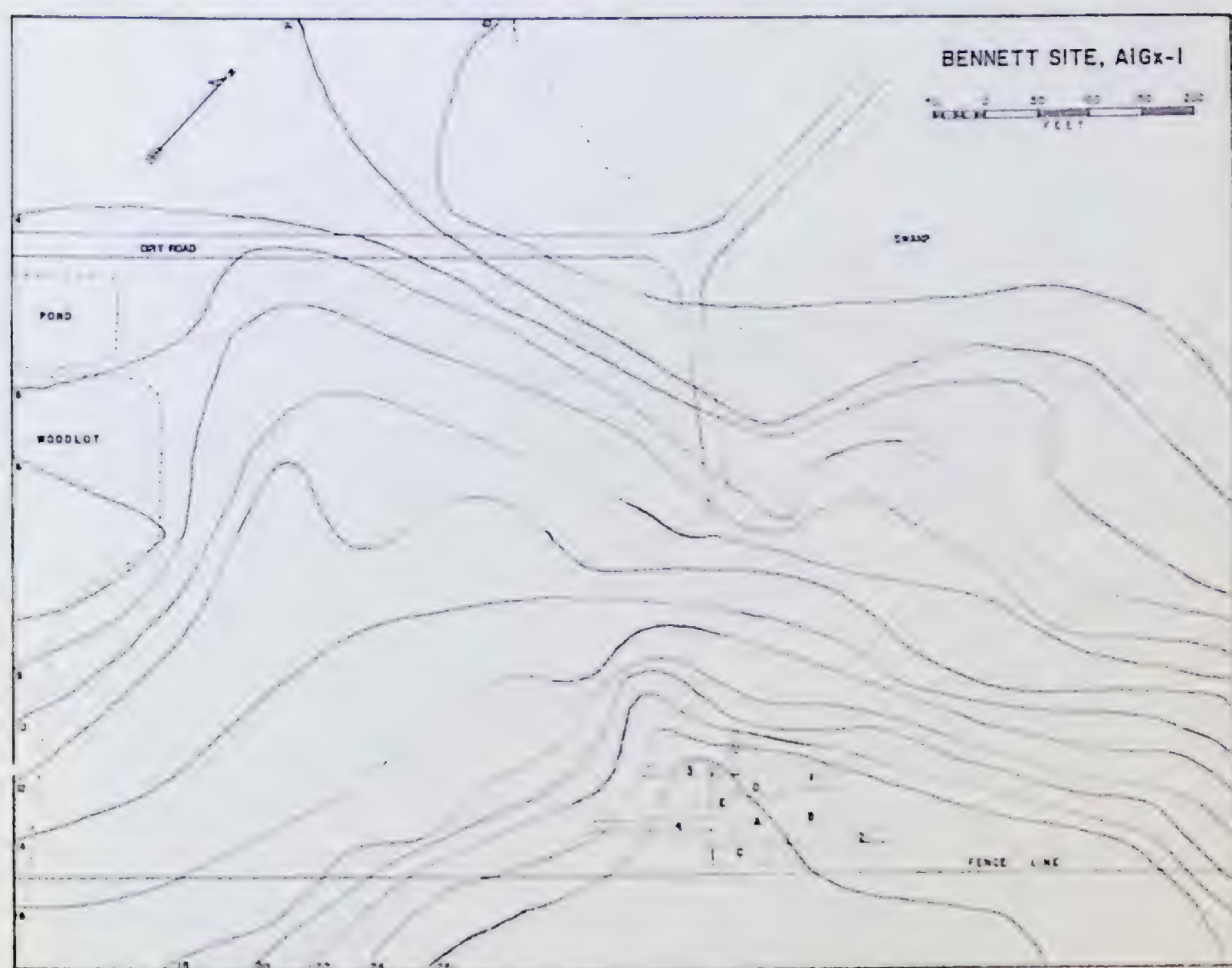


FIGURE 1—*Site plan*

owner, Mr. J. M. Bennett. Crop conditions restricted the 1962 excavations to Mr. Ryerse's property, although some excavation had been carried out on the property of Mr. Teeffe in 1961. These properties are approximately 13 miles northwest of the city of Hamilton on lot 14, concession 1, Nelson Township, Halton County. In this highland region, characterized by gently rolling hills, the nearest stream is a tributary of Bronte Creek almost one mile from the site. The site occupies a small knoll composed of silt-sand and weathering sandstone fragments and surrounded by swale and springs. Evidence of occupation was generally limited to above the 24-foot contour line. This would suggest an area of occupation slightly in excess of one acre on the Ryerse property. If the same contour demarcates the site limits on the Teeffe property to the southeast of the fence line, then the total area occupied by the site is between 2.5 and 3 acres. Although the entire site area had been ploughed for many years and some road scraping and indiscriminate digging had been done, the degree of disturbance was relatively slight.

Acknowledgments

The Bennett site excavation was financed by the National Museum of Canada and McMaster University, Hamilton, Ontario, and equipment and trained personnel were provided by the Department of Anthropology, University of Toronto. The work period extended from May 18 to June 27, 1962, and was under the direction of the writer. Dr. J. N. Emerson, Supervisor of Archaeological Studies at the University of Toronto, and the coordinating committee at McMaster University, consisting of professors F. G. Vallee, A. G. MacKay, C. M. Johnston, F. Mischel-Henry, and H. Wood, rendered innumerable services that had a direct bearing on the effectiveness of the excavation.

The crew was both competent and enthusiastic, a combination of traits which certainly helped to account for the considerable body of data that was acquired in a relatively short time. Mr. W. C. Noble, foreman, and Dr. G. F. MacDonald, National Museum assistant, fulfilled their duties in a most admirable fashion. The remaining full-time crew consisted of the following University of Toronto students: Mr. J. M. Young, who mapped the site, Mr. W. F. Hunter, Mr. M. W. Spence, Mr. A. Ervine, Miss J. O. Chute, Miss U. Linnamae, Miss D. R. Solandt, Miss H. Soucy, and Miss C. Andrews. In addition, part-time crew members came from McMaster University.

Sincere appreciation is extended to Mr. H. R. Ryerse of Burlington, Ontario, who allowed us to excavate his property.

The following members of the National Museum readily made their services available: Dr. D. E. McAllister who identified the fish remains; Mr. P. M. Youngman who identified some of the mammal remains; and Dr. A. H. Clarke, Jr., who identified the shells. Dr. H. C. Cutler of the Missouri Botanical Gardens, St. Louis, Missouri, kindly consented to examine the carbonized corn fragments recovered from the site.

EXCAVATION

The 1961 excavation had expressed an abundance of post moulds and pits. On the basis of these findings the 1962 excavation techniques were oriented toward obtaining the maximum amount of settlement pattern data. Square and rectangular excavation units as well as trenches were used. The dimensions and square footage of each unit are given in Table 1, and the relationship of these units to one another is illustrated in Figure 1. Table 1 does not include the occasional necessary extensions that had been made from the excavation units either to incorporate certain features or to follow out post mould patterns. These extensions, however, are illustrated in Figure 2.

TABLE 1—*Excavation unit data*

Designation	Dimensions (ft.)	Square Footage
Unit A.....	50 × 45	2,250
Unit B.....	50 × 50	2,500
Unit C.....	50 × 20	1,000
Unit D.....	50 × 20	1,000
Unit E.....	65 × 20	1,300
Unit F.....	50 × 25	1,250
Trench 1.....	40 × 5	200
Trench 2.....	50 × 10	500
Trench 3.....	63 × 10	630
Trench 4.....	115 × 10	1,150
Total		11,780

Initial excavations had revealed that the plough zone (6 to 10 inches in depth) was relatively unproductive of specimens, and it was, therefore, removed by shovel and subjected to only a very cursory examination. Beneath the plough zone, each excavation unit was shovel-shined and trowelled to expose posts, pits, and other features. In each corner of an excavation unit a long, hollow metal rod was firmly set. Occasionally, rods were placed at other loci relative to the demands of the plotting procedure. Each rod was given a coordinate number, and any two coordinates of a unit were used as the abscissa and the ordinate to record the position of posts and other features by triangulation with tapes. Each set of readings was immediately plotted on a map and also recorded in a note book to guard against the assigning of readings to the wrong coordinates when the two coordinate numbers were accidentally interchanged. This technique was particularly effective in accurately and rapidly recording the numerous subsoil features illustrated in Figure 2.

FEATURES

Features consisted of burials, house structures, a palisade, pits, hearth floors, pot concentrations, and an artifact cache. There was tenuous evidence that midden deposits had once existed in unit E and at the end of Trench 4, but these data were insufficient to allow the description of midden deposits.

Figure 2 represents the detailed floor plan of the excavation, and Figure 3 illustrates diagrammatically the real and inferred house structures and palisade configurations.

BURIALS

Including a burial excavated in 1961, there were 13 graves involving 15 individuals uncovered at the Bennett site. Although bone preservation was excellent, the shallowness of the graves in some instances contributed to extensive breakage and scattering by plough action. Nine graves were concentrated in or adjacent to house structure 1, whereas the remainder were randomly distributed.

Burial 1

This child burial was excavated in 1961 during the University of Toronto investigation of the site.

Burial 2 (Plate I, fig. a)

Burial 2 was represented by the skeleton of a young child who had been placed in a tightly flexed position on its left side with the hands at the face. The body had been forced into a small depression in such a way that the torso was lower than either the skull or the lower limbs. Indeed, the top of the skull had been creased by a deep plough furrow. The body was headed in a southwesterly direction while the face was oriented downward and slightly to the north. A pit outline was not observable, and the body appeared to have been covered with relatively clean sand.

Burial 3 (Plate I, figs. b, c)

The dismembered body of an old man had been placed on its left side with the skull facing down. Directly under the torso occurred the lower limbs in a tight bundle, and although the legs were in correct anatomical relationship, the feet and the patellae were missing. The two arms with hands attached had been placed, respectively, on the wrong sides of the torso in loosely flexed positions with the elbows oriented toward the head. The body, heading approximately south, was tightly packed into a circular pit filled with relatively clean sand and having a diameter of 3 feet and a depth of 14 inches into the subsoil. Missing bones consisted of the feet, patellae, scapulae, and clavicles, and it appeared that these portions of the body had been deposited with burial 9.

Burial 4 (Plate I, fig. d)

Most of burial 4 had been destroyed by the plough. The shallow remnant of a circular pit contained the incomplete remains of a dismembered adult including an articulated foot and a portion of a lower arm. An abundance of adult skeletal fragments were recovered from the plough zone in the immediate area of the burial.

Burial 5 (Plate II, fig. a)

Burial 5 was represented by two tightly flexed adults which had both been severely damaged by plough. As was the case with the preceding burials, the grave fill consisted of a clean sand that was very difficult to distinguish

from the surrounding subsoil. Individual 1 was placed on its left side with the hands at the face. The body headed north-northeast and faced approximately south. Individual 2 rested on its right side with the hands at the face and headed northwest by west and faced south.

Burial 6

This grave had been the object of considerable disturbance, and the highly fragmented bones of an adult male bore no observable relationship to one another. If the grave pre-dated the construction of house structure 1, then its location in the north wall explains the disturbance. The adjacent burial 3, however, was also situated in the north wall of house structure 1, but it had not been disturbed.

Burial 7

No burial pattern could be discerned from the extremely disturbed remains of the six-year-old child representing burial 7.

Burial 8 (Plate II, fig. b)

Burial 8 consisted of the skeleton of a 25-year-old female whose body had been placed in a tightly flexed position on its right side with the hands at the face. The skull pointed south and faced east and obliquely downward. The circular grave pit, with a diameter of 3 feet and a depth into the subsoil of 11 inches, contained a dark to light brown fill with a higher ash content than in the preceding graves.

Burial 9 (Plate II, fig. c; Plate III, fig. a)

The bundle burial of a 3-year-old child and portions of an adult shared the grave. All the bones, which formed a very tight bundle measuring 1 foot 3 inches by 8 inches, were packed into an ovate pit 1 foot 8 inches long by 1 foot 4 inches wide. Of significance are the adult bones, which consisted of the feet, patellae, scapulae, and clavicles of presumably one individual. The adult remains are specifically the portions of the body missing from the dismembered old man designated burial 3 and located nearly ten feet to the west of burial 9.

Burial 10 (Plate II, fig. d; Plate III, fig. a)

Burial 10 consisted of a 6-year-old child resting on its left side in a tightly flexed position with the hands at the face. The head pointed east and faced south, while the torso was oriented along a north-south axis. Two holes had been punched through the right parietal, probably by small posts being driven into the interior floor of house structure 1. A grave outline could not be accurately determined, although the soil around the burial was a brown sand containing some ash.

Burial 11 (Plate III, fig. b)

Only the lower part of the body of this 6-year-old child was articulated; the ribs, mandible, scapulae, axis, atlas, cervicals, and clavicles were scattered in the grave fill above the body, and the skull, upper limbs, and some of the cervical vertebrae were missing. The articulated lower portion

of the skeleton rested in a tightly flexed position on its left side and headed south. The pit, measuring 35 inches by 25 inches and extending for 14 inches into the subsoil, contained a dark yellow fill devoid of refuse.

Burial 12 (Plate III, fig. c)

The body of a young adult male had been crammed head-first into pit 32 in such a manner that the right knee was just below the plough zone, whereas the skull was 18 inches below the same zone. Pit 32 was one of the pear-shaped pits to be discussed shortly, and the body occurred in the head of the pit where it rested on its right side in a flexed position, heading south and facing east. The right hand was under the jaw, and the left hand rested across the right elbow region. In the main body of pit 32 an isolated left femur with the head missing was encountered.

Burial 13 (Plate III, fig. d)

The body of an adult female had been placed on its back in the bottom of pit 41 with the left leg strongly flexed under the right side of the rib cage and with the right femur extended at a right angle to the body and the lower limb flexed back so that the foot rested against the right ilium. The left arm was flexed parallel to the body with the hand clenched, but the lower right arm was too disturbed to determine its original position. In addition, an adolescent's left femur lacking its distal epiphysis occurred in the pit. The skeleton rested 32 inches below the surface of the subsoil, and the extra femur was 7 inches higher in the pit. The body had been placed directly on top of a dark charcoal-stained lens, which represented the floor of the pit.

Dog Burial (Plate IV, fig. a)

The single dog burial discovered at the site was located in a small pit within the confines of house structure 3. Although regarded as a bundle burial, some of the phalanges, ribs, vertebrae, and the left radius-ulna were found in anatomical order. The specimen, a mature individual, had been placed in a 13-inch by 9-inch ovate pit with a depth of 10 inches below the subsoil surface. The grave fill consisted of clean sand.

HOUSE STRUCTURES

Three definite houses and four tentative houses have been inferred from the subsoil features illustrated in Figure 2. Portions of other house structures may be present, but they are not recognizable. Indeed, only house structure 1 is completely and clearly demarcated. The remaining two definite structures were not completely excavated, and substantial portions of their walls could not be traced. Figure 3 illustrates diagrammatically the inferred arrangement of the houses in relationship to the palisade.

House Structure 1 (Plate IV, fig. b)

House structure 1 measured 55 feet in length and 22.5 feet in width. The original length of the house, however, appears to have been 40 feet, and an addition of 15 feet seems to have been added at some later date. Although the house is oriented northeast by east – southwest by west, its longitudinal

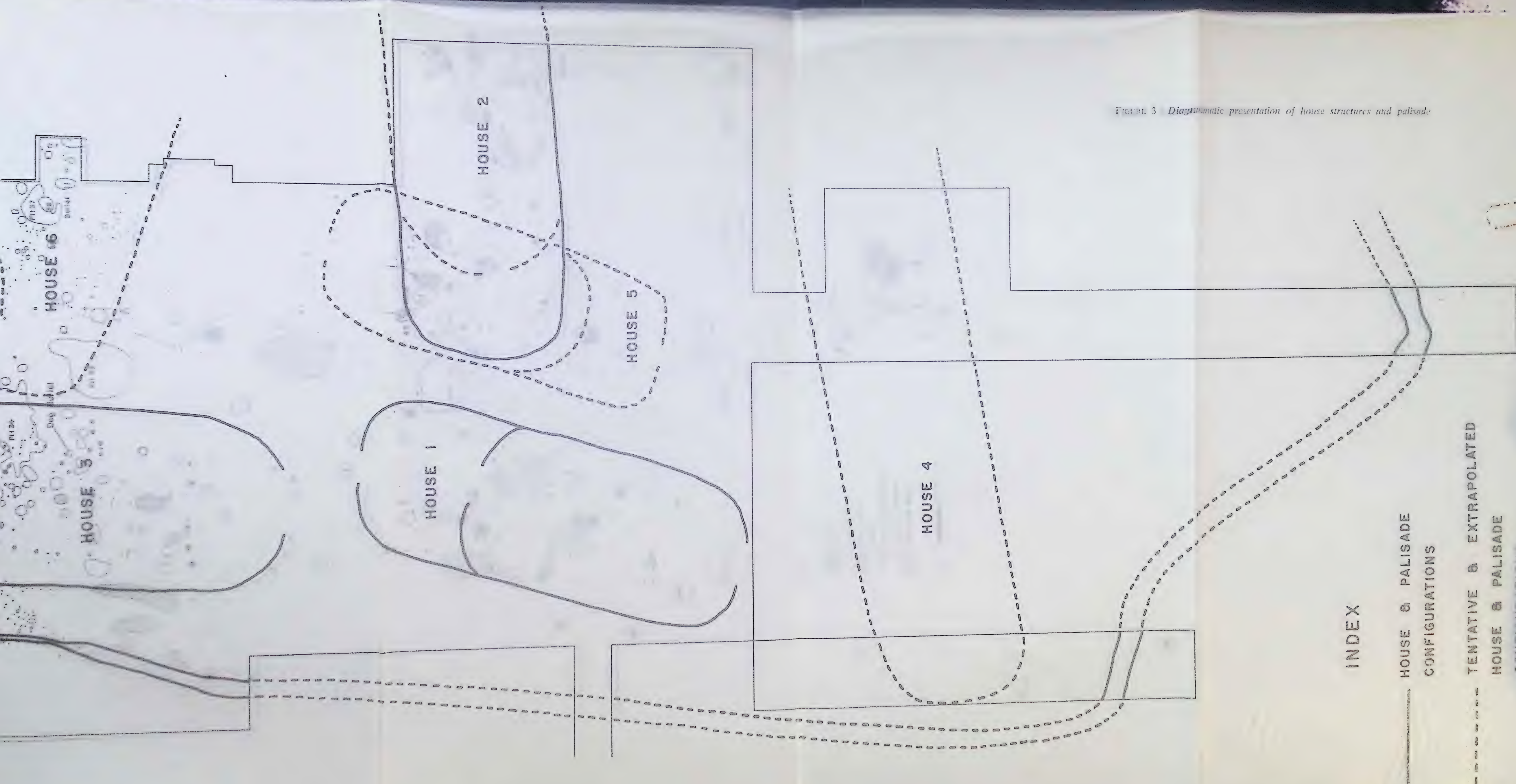


FIGURE 3 Diagrammatic presentation of house structures and palisade

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- HOUSE & PALISADE CONFIGURATIONS
- TENTATIVE & EXTRAPOLATED HOUSE & PALISADE CONFIGURATIONS





FLOOR PLAN

- Burials
- Pits
- Shallow Pits
- Fire Floors
- Pots
- Pot Concentrations
- Artifact Caches
- Disturbed Areas

SCALE 0 10 20 FEET



FIGURE 2 Excavation floor plan

axis will be regarded as east-west for descriptive purposes. A fairly definite entrance way occurs at the east end of the house. Other possible entrance ways, however, have been obscured by pit 29 at the west end of the house, burials 3 and 6 along the north wall, and the generally poor post mould demarcation along the entire north side of the house. A sample of 26 sequential wall posts range in diameter from 2 inches to 4 inches with a mean of 3.3 inches. Five of these posts were sectioned, ranging in depth into the subsoil from 5 inches to 16 inches with a mean of 9.2 inches. Of the ten interior posts with diameters of 6 inches or more, four were aligned parallel to the north wall and another four were parallel to the south wall. Both rows of large posts were approximately 4 feet 8 inches in from the respective walls, and, with one exception, were separated from one another longitudinally by roughly 7.5 feet. Also, the interior large post lines were restricted to the original house structure of 40 feet and were not found in the 15-foot extension. Such an arrangement suggests that the two rows of large posts acted as interior supports and/or sleeping platform supports. The eight posts involved range in diameter from 6 inches to 8 inches with a mean of 7 inches. Seven posts were sectioned, ranging in depth from 5 inches to 17 inches with a mean of 10.7 inches. When used in conjunction with other features the large interior posts were of value for demarcating house structures where large portions of the exterior walls were not discernible.

A single, medially located hearth floor consisting of a somewhat irregular area of red-burnt sand was found in house structure 1. The myriad of small posts generally associated with these central hearths were either not discernible or not present. Burials 1, 3, and 5 to 10 were located within the confines of the northern half of the house, but it was not possible to determine whether the burials, collectively or individually, postdated, antedated, or were contemporaneous with the house. Thirty-five pits were also situated within the confines of the house, and a definite clustering of eleven pits was immediately to the north of the central hearth. Pit 29 at the west end of the house was the only very large pit encountered; the remaining pits, as a rule, were small, circular features containing stained sand and/or ash but relatively little refuse.

An interesting appendage to house structure 1 was a line of posts that started from the southeast corner of the house and ran for approximately 37.5 feet parallel to the south wall. The line ranged from 3.75 feet to 5.5 feet from the south wall of house structure 1. A sample of 29 sequential posts had a mean diameter of 2.1 inches and ranged from 1.5 inches to 2.75 inches. Five posts were sectioned, ranging in depth from 3 inches to 5 inches with a mean of 4 inches. It is inferred that the feature represents the exterior wall of a shed which had been attached to the house and used possibly as a wood storage area.

House Structure 2 (Plate IV, fig. c)

Because house structure 2 extended outside the excavated portion of the site, the full length of the structure was not obtained. The length exposed was 43.75 feet, and the width was 22.5 feet. Although the length of the

house falls along the northwest-southeast axis, the longitudinal axis will be regarded as north-south for descriptive purposes. An incomplete line of posts along the western half of the house suggests that a 12.5-foot northern extension had been added. Although the possibility exists that the lines of posts in both house structures 1 and 2 represent interior partitions rather than house extensions, the arced configuration of the posts favours the latter interpretation. No definite entrance ways could be discerned, probably because of the complex situation at the northern end of the structure which appeared to involve another house. Also, the inability to demarcate most of the east wall posts posed serious problems to an accurate reconstruction. A sample of 28 of the west wall posts ranged from 2.75 inches to 5 inches in diameter with a mean of 3.7 inches. Seven posts were sectioned, ranging in depth from 7 inches to 14 inches with a mean of 10.7 inches. Of the larger interior posts paralleling the wall, only five could be recognized along the west wall of the house. These posts constituted a row 10 feet long running approximately 5 feet in from the wall (range 4.5 feet to 5.5 feet). Diameters ranged from 5.5 inches to 6.5 inches with a mean of 6.2 inches, and the depth of four posts ranged from 5.25 inches to 11.5 inches with a mean of 8.9 inches. A number of other large posts occurred medially in the structure.

Two central hearth floors, represented by areas of fire-burnt sand, were encountered. The northernmost hearth was 32.5 feet from what is regarded as the northern end of the house but was only 6 feet north of the other central hearth. In between the two hearth floors a maze of small posts were present. A sample of 27 of these posts ranged from 1 inch to 2.5 inches in diameter with a mean of 1.6 inches. It is inferred that the posts functioned as supports in cooking and drying activities around the hearths.

In the southern portion of house structure 2, where matters had not been confused by the presence of another house, there were 24 pits, although one of the pits (pit 18) cut across the west wall from outside the house. Two pot concentrations also occurred within the confines of the house. In the northern end of house structure 2, which was intersected by a tentative house structure, 14 pits were present, but three of these pits extended beyond the house walls. Two hearth floors and a cache of unfinished celts also were located in this region. As a result of the apparent overlapping of two houses it was not possible to assign with accuracy most of these features to a specific house. Seventeen of the 24 pits in the southern portion of house structure 2 fell within a 10-foot radius of the northernmost central hearth, as did the two pot concentrations. Of these 19 features, 14 occurred to the west of the medial axis.

Along the west wall of house structure 2, a double line of posts occurred which resembles the inferred shed attachment noted along the south wall of house structure 1. The innermost line of posts began at the northwest corner of the house, paralleled the west wall for 31.3 feet, and then bent out from the house for a short distance. At the point where the line swings away from the house the maximum distance from the house wall is 4 feet. The outside line of posts is 27.8 feet long and attains a maximum distance from the house of 7 feet at its southern extremity. Forty-seven sequential posts from

the two lines ranged in diameter from 1.75 inches to 3 inches with a mean of 2.25 inches. Only two posts were sectioned; these had depths into the subsoil of 4.5 inches and 6 inches.

House Structure 3 (Plate IV, fig. d)

House structure 3 was not completely excavated. The exposed length was 52.5 feet, and the width was 23.1 feet. The long axis of the house is oriented northeast-southwest but will be regarded as having an east-west orientation for purposes of description. Approximately forty feet of the south wall was missing, but the remaining wall posts and the internal features of the house allowed a fairly accurate estimate of the position of the missing wall. A sequential sample of 30 posts along the north wall ranged in diameter from 2.5 inches to 3 inches with a mean of 2.7 inches. Only one of these posts was sectioned and was 6 inches deep. Twenty of the 38 large interior posts with diameters of 6 inches or more paralleled the house walls in a similar fashion to that noted in house structure 1. This alignment was particularly clear along the north wall of the house where eleven large posts formed a line 35 feet long which paralleled the north wall at distances ranging from 54 inches to 69 inches with a mean distance of 62 inches between the house wall and the large post line. The spacing of these large posts from one another was variable. Nine similar posts paralleled the south wall at distances ranging from 59 inches to 68 inches with a mean of 63 inches. These large interior lateral support and/or sleeping platform posts ranged in diameter from 6 inches to 10 inches with a mean of 7.3 inches. Eighteen of the 20 posts were sectioned, and their depths into the subsoil were from 8 inches to 23 inches with a mean of 14.7 inches. Three large posts connected with the westernmost posts of the two lateral lines to form a partition 13 feet from the western end of the house. These posts ranged in diameter from 9 inches to 12 inches with a mean of 10 inches, and their depths ranged from 18 inches to 21 inches with a mean of 19.3 inches. Only three small pits and four post moulds occurred to the west of the partition, in contrast to the numerous features on the opposite side.

Two central hearth floors consisting of areas of fire-burnt sand occurred in the western portion of the house. The centre of the westernmost hearth floor was 18 feet 9 inches from the west end of the house and 11 feet 3 inches west of the centre of the other hearth. Very few of the small post moulds generally encountered around these features were observed. Other features found in house structure 3 consisted of 42 pits, three pot concentrations, and one dog burial. More than half the pits, one pot concentration, and the dog burial were within a 10-foot radius of the easternmost central hearth with most features to the east and south of the hearth floor.

Tentative House Structure 4

Trenches 3 and 4 cut across what appeared to be another house structure, although the limited area exposed places the reconstruction on a tentative basis. The possibility that a house was involved was recognized in the field, but because of the termination of excavations the extension of Trench 4 could

not be carried to the point of demonstrating the house's existence with certainty. Indeed, time was so short that not all the pits and posts in the southeastern portion of the extension could be plotted.

House structure 4 is oriented northwest by west-southeast by east along its major axis, but for convenience of description it will be regarded as lying along a north-south axis. The southern end of the house was not exposed in the extension from Trench 4, thereby indicating that its length is in excess of 75 feet. The house width was 22.5 feet, although this measurement was derived, in part, by extrapolation. With the exception of the northwest corner, the northern end of house structure 4 was fairly well demarcated. In Trench 4 the eastern wall was virtually absent, and there were gaps in the western wall. The internal features of the trench, however, were very valuable in lending credence to the extrapolation of both house walls. Sixteen sequential wall posts in Trench 3 ranged in diameter from 2 inches to 4 inches with a mean of 2.7 inches. The only sectioned post was 8 inches deep. Of the 14 large posts associated with house structure 4 in Trench 4 there were 10 which paralleled the tentative west wall and the inferred east wall. The six large posts paralleling the east wall ranged from 48 inches to 60 inches from the inferred wall with a mean distance of 55 inches. Four large posts paralleled the west wall at distances ranging from 54 inches to 70 inches with a mean of 61 inches. Diameters of the 10 large posts ranged from 6 inches to 10 inches with a mean of 7.75 inches. All these posts were sectioned, and their depths into the subsoil were from 7 inches to 14 inches with a mean of 10.6 inches. The spacing between the large posts of both interior lateral lines was variable.

A single, large, central hearth floor was exposed in the southern extension of Trench 4. Other features encountered in house structure 4 included four pits in Trench 3 and more than 27 pits in Trench 4 (time did not allow the complete recording of all features in the southern extension from Trench 4). More than half of the pits in the Trench 4 portion of the house fell within a 10-foot radius of the central hearth.

Tentative House Structure 5

The very tentative house structure 5 cut across the north end of house structure 2 thus posing problems in interpreting the interior features. Also, the assumed wall posts were not so continuous as would be desired, particularly along the south wall. The house was completely exposed and had a length of 48.75 feet and a width of 20.6 feet. Though house structure 5 paralleled house structure 1 and therefore possessed the same longitudinal axis (northeast by east - southwest by west), this axis will for convenience be regarded as east-west. The two houses were approximately 6.5 feet apart. A sample of 21 sequential wall posts making up the northeast corner of the house ranged in diameter from 2 inches to 3 inches with a mean of 2.4 inches. Only two of these posts were sectioned, and their depths into the subsoil were 8 inches and 10 inches. House structure 5 appears to have had an 11-foot 3-inch addition built on to the western end of the house which would have made the original house 37.5 feet in length. Largely owing to the overlapping of house structures 2 and 5, little sense could be made of the

large internal posts of the latter house. There was, however, a 15-foot-long line of posts which ran parallel to the north wall starting nearly at the western end of the house. The line was approximately 55 inches from the house wall.

In addition to the two central hearth floors in house structure 5, a third identical hearth floor consisting of fire-reddened sand occurred to the south of the easternmost central hearth floor. This feature could have been associated with either house structure 2 or house structure 5, or with neither, and consequently will not be considered further. The western central hearth was 10 feet from the western end of the house, and the eastern central hearth was approximately 11 feet from the eastern end. Seven pits and burial 2 appeared to be associated with house structure 5. Eleven other pits could have been associated with either house structure 5 or house structure 2.

Tentative House Structure 6

House structure 6 is probably the most tentative of the four possible house structures encountered at the Bennett site (house structures 4-7). The house was not completely exposed, but its estimated minimum length was 37.5 feet and estimated width was 22.5 feet. Although the longitudinal axis of the house was northwest by north - southeast by south, it will, for descriptive purposes, be regarded as north-south. Only the east wall of the house was well demarcated, and the position of the very incomplete western wall was extrapolated from what was interpreted as the paralleling line of large interior posts. Fourteen sequential posts from the east wall were 2.5 inches in diameter, and none were sectioned. When the short portion of the west wall was extended to parallel the complete east wall, it was found that a line of small and large interior posts formed a parallel line ranging from 4 feet to 5 feet from the extrapolated west wall. The three large posts in this line ranged from 4 inches to 5 inches in diameter with a mean of 4.3 inches. These posts ranged in subsoil depth from 12 inches to 16 inches with a mean of 13.3 inches.

Because house structure 6 overlapped house structure 7, it was not possible to determine with certainty the number of features in the former house. No central hearths were present, but 38 pits and one burial fell within the confines of the house although ten of these pits occurred in the overlapping portion of house structure 7. Two large pits (32 and 34) cut across the inferred house walls of structure 6. As was stated earlier, the reconstruction of house structure 6 is very tentative, and in view of the necessity for extensive extrapolation the preceding description should be regarded as only the most likely reconstruction inferable from the available data.

Tentative House Structure 7

House structure 7 is also a tentative reconstruction, and its posts do not form a clearly demonstrable configuration. If the reconstruction is correct, house structure 7 represents the smallest house exposed at the Bennett site. It measured approximately 25 feet by 22.5 feet. The long axis of the house was northeast-southwest but will be regarded as east-west for purposes of description. This orientation paralleled house structure 3, and, indeed, a

portion of the south wall of house structure 3 appeared to overlap a portion of the north wall of house structure 7. A substantial area of the eastern end of the house was not excavated. At the western end of the house where it overlapped house structure 6 there appeared to be an entrance way. A sequential line of 17 south wall posts ranged in diameter from 2.5 inches to 3 inches with a mean of 2.7 inches. Only one of these posts was sectioned, and it was 18 inches deep. The large interior posts appeared to be clustered randomly towards the centre of the house. One highly disturbed central hearth floor was present as well as 22 pits, ten of which could also belong to house structure 6. A single pot concentration cut across the adjoining wall of house structures 7 and 3. The fire-reddened sand hearth floor was 8.5 feet from the north wall, and although not central the inferred dimensions of house structure 7 would not appear to call for a medial placement.

It is unfortunate that the possible form of house structure 7 was not recognized in the field so that the eastern portion of the proposed house could also have been excavated to either confirm or negate the preceding reconstruction.

TABLE 2—General house structure data

House	Length (ft.)	Width (ft.)	Longitu- dinal axis (actual)	Longitu- dinal axis (descrip- tive)	Extension length (ft.)	No. of central hearths	No. of pits	No. of burials
1	55	22.5	NE×E — SW×W	E-W	15	1	35	8
2	43.75+	22.5	NW — SE	N-S	12.5	2	24+	—
3	52.5+	23.1	NE — SW	E-W	—	2	42+	—
4	75+	22.5	NW×W — SE×E	N-S	—	1	31+	—
5	48.75	20.6	NE×E — SW×W	E-W	11.25	2	7+	1
6	37.5+	22.5	NW×N — SE×S	N-S	—	—	28+	1
7	25	22.5	NE — SW	E-W	—	1	22+	—

PALISADE

A double palisade was encountered in unit F and trenches 3 and 4, running approximately along the 24-foot contour of the site (Plate V, fig. a). Trench 1, which was originally excavated in the hope of crossing the palisade, did not reveal any posts or features. The soil in Trench 1, however, was very dry and sandy, and it is most likely that the palisade was there but was not discernible. Although the palisade, as extrapolated, appeared to run relatively straight along the northwest face of the site, it possessed at least two relatively sharp angles on the southwest face. This angling of the palisade at one of the weakest points of the site in terms of natural defence may not have been fortuitous, and it is speculated that such a palisade configuration could have had a function like that of bastions. Outside the palisade in Trench 3 a number of small stones weighing two pounds or less were noted, and possibly these were discarded missiles used to defend the palisade. In both trenches 3 and 4 the interior and exterior palisade lines are spaced approximately 3 feet 2 inches apart. In unit F the spacing is 2 feet 3 inches except for the northeastern portion, which, on the basis of the post moulds, could have either pinched into a single line or splayed out to form a much broader and more irregular double line. Another line of posts in Trench 3 occurred roughly four feet back from the interior palisade line, suggesting a possible triple palisade at this point in the defences. A line of posts extending from the northwest corner of house structure 3 appear to connect with the palisade, and another line of posts from the northeast corner of house structure 4 may have made a similar connection to the palisade. It may be speculated that these connecting lines of posts between the palisade and house structures 3 and 4 represented additional defensive measures which would further have contained an enemy who had successfully breached the palisade proper by making it necessary for him to penetrate also either the house wall or the connecting wall between the house and the palisade. By taking the palisade portion in Trench 3 as a sample, it may be surmised that the 15 exterior palisade posts ranged in diameter from 2 inches to 3 inches with a mean of 2.5 inches and that the 26 interior palisade posts ranged in diameter from 1.5 inches to 3.5 inches with a mean of 2.3 inches. None of these posts were sectioned.

PITS

For descriptive purposes the 243 pits encountered at the Bennett site have been separated into small pits and large pits. The diameter or longest dimension of the small pits does not exceed 30 inches. During the initial excavations an attempt was made to designate all pits by a number. This system was soon discarded in view of the abundance of pits, and only certain features were given numbers (generally the larger pits). As a result, some small pits are numbered and some large pits are not. All pits, however, were recorded by their triangulating coordinates and the dimensions, form, profile, and fill characteristics. Detailed field profiles were generally restricted to the larger pits.

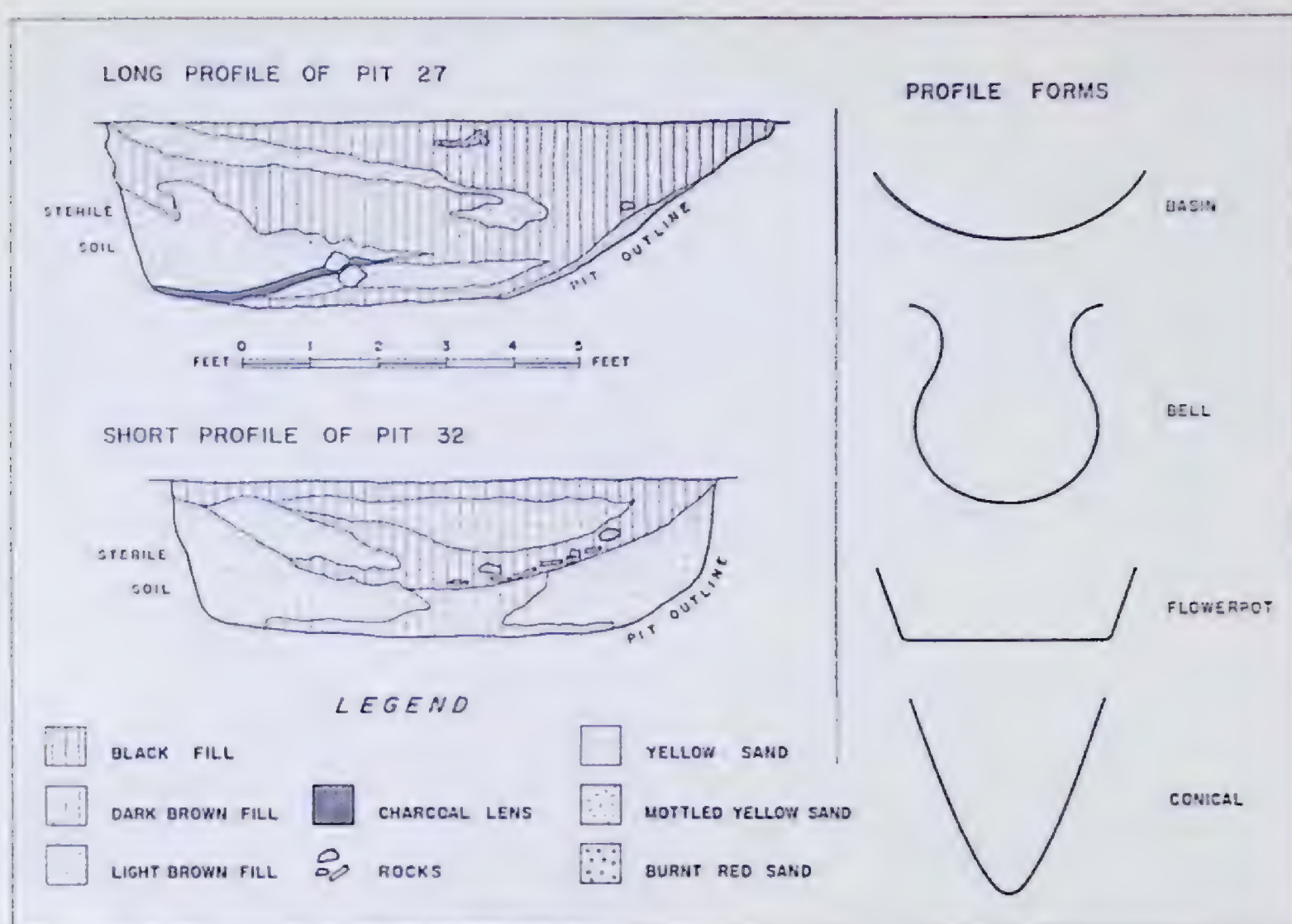


FIGURE 4—Pit profiles

Small Pits (Plate V, fig. c)

The 206 small pits represent 85 per cent of the pits encountered. In form, 178 (86.4) were circular, 25 (12.1) were ovate, and 3 (1.5) were irregular. Profile form (Figure 4) consisted of the following: basin 200 (97.0), bell 3 (1.5), flower pot 2 (1.0), and conical 1 (0.5). Pit fill consisted of the following: mottled sand 142 (69.4), ash 30 (14.6), black charcoal-stained sand 27 (13.1), ash floor and black sand fill 4 (1.9), fire-reddened sand floor and ash fill 1 (0.5), and fire-reddened sand 1 (0.5). Only six of these pits produced 15 or more artifacts (range 22–79, $\bar{x} = 38.7$), and another pit contained eight large cobbles, which probably represent unshattered hearth stones. In addition, pit 19 contained a relatively complete deer skull (Plate VI, fig. a).

The diameters of the 178 circular small pits ranged from 5 inches to 28 inches with a mean of 14 inches. The depths of these pits ranged from 0.5 inches to 18 inches with a mean of 5.9 inches. With reference to the 25 ovate pits, the major axis ranged from 12 inches to 30 inches with a mean of 21.2 inches, and the minor axis ranged from 7 inches to 26 inches with a mean of 14.9 inches. The depths of these pits, measured from the subsoil surface, ranged from 2 inches to 25 inches with a mean of 7.1 inches. For the three irregular small pits the major axis ranged from 21 inches to 24 inches, with a mean of 22.3 inches, and the minor axis ranged from 12 inches to 24 inches with a mean of 19 inches. Depths below the subsoil surface ranged from 4 inches to 5 inches with a mean of 4.3 inches.

Location occurrences of the small pits were as follows: isolated 30 (14.6); house structure 1, 31 (15.0); house structure 2, 23 (11.2); house structure 3, 39 (18.9); house structure 4, 27 (13.1); house structure 5, 4 (1.9); house structure 6, 25 (12.1); house structure 7, 10 (4.9); house structures 2 or 5, 7 (3.4); and house structures 6 or 7, 10 (4.9). Of the 206 small pits, 176, or 85.4 per cent, were associated with house structures, real and inferred. Although the low frequency of small pits associated with house structure 7 may be attributed to its size, the paucity of these pits in house structure 5, including those shared with house structure 2, throws a strong element of doubt on the actual existence of this inferred house structure. In terms of the distribution of the two major small pit forms, only two, or 1.0 per cent, of the ovate pits were not associated with house structures, whereas 27, or 13.1 per cent, of the circular pits were isolated from the house structures.

Large Pits (Plate III, figs. c, d; Plate V, fig. d)

Thirty-seven pits with one or both dimensions in excess of 30 inches were encountered. They represent 15 per cent of the pits found in the site exclusive of burials and pot concentrations. There were 26 (70.3) ovate pits, 6 (16.2) pear-shaped pits, and 4 (10.8) irregular pits. One (2.7) pit was not sufficiently exposed to determine its shape.

For the ovate pits the major axis ranged from 32 inches to 102 inches with a mean of 51.1 inches, and the minor axis ranged from 14 inches to 76 inches with a mean of 33.7 inches. Two ovate pits actually consisted of two large intersecting pits (pit 17) and three large intersecting pits (pit 18), respectively. The differences in the fill of the intersecting pits, however, did not allow effective delineation of the individual features, and, therefore, they have been recorded as single pits. Ovate pit depths, measured from the subsoil surface, ranged from 4 inches to 52 inches with a mean of 18.9 inches. An approximate artifact count, including pot sherds, for these pits ranged from 0 to 1,071 with a mean of 173 specimens. Only one ovate pit was predominantly composed of ash; the remainder were composed of mottled sand and ash of various shades. Ash lensing was particularly noticeable in a few of the largest pits. Profile forms consisted of gently sloping basins (19), flat-bottomed with nearly vertical sides (6), and flat bottomed with undercut sides (1). In each of two of the three intersecting pits making up pit 18, one relatively complete deer skull was found. Location of the ovate pits with reference to house structures was as follows: isolated (7), house structure 1 (4), house structure 2 (1), house structure 3 (2), house structure 4 (4), house structure 5 (2), house structure 7 (2), and house structures 2 or 5 (4).

The pear-shaped pits represented a quite distinct pit type at the Bennett site. All six pits were characterized by a large ovate body and a small appended head, which, as indicated by the profile and other factors, represented a definite appendage and not an intersecting smaller pit. The major axis of these pits ranged from 105 inches to 132 inches with a mean of 118.4 inches, and the minor axis ranged from 66 inches to 88 inches with a mean of 73.6

inches. Pit depths, measured from the subsoil surface, ranged from 29 inches to 38 inches with a mean of 32.8 inches. An approximate artifact count, including pot sherds, for the pits ranged from 85 to 991 with a mean of 366.8. The pit fill consisted generally of mottled sand with ash and charcoal lenses. Profile form was always a flat floor and vertical to nearly vertical walls in the main body of the pit, except near the head section where the pit floor angled gradually upward (Figure 4). Burial 12 had been placed in the head of one of three pits (pit 32), and an additional human femur occurred near the floor of the main part of the pit (Plate III, fig. c). Similarly, burial 13 had been placed in the bottom of a pear-shaped pit (pit 40), and an additional human femur occurred nearby (Plate III, fig. d). A line of 16 posts which ran along the south flank of pit 28 may have been associated with the pit. Fourteen of these sequential posts ranged in diameter from 1.25 inches to 2.5 inches with a mean of 2 inches. Only one post was sectioned. This had a depth of 18 inches.

The four irregular large pits ranged in maximum length from 51 inches to 159 inches with a mean of 91.3 inches and in maximum width from 24 inches to 76 inches with a mean of 48.7 inches. Depths, measured from the surface of the subsoil, ranged from 8 inches to 14 inches with a mean of 11 inches. All four pits were relatively flat bottomed. It is suspected that the irregular pits were once more uniform in shape and that they have subsequently been disturbed by tree-falls and/or aboriginal digging. Fill consisted of mottled sand (2), ash (1), and dense black sand (1). Only one pit was rich in artifacts: it produced 50 specimens. The four pits were located one each in house structures 3, 4, and 6, and one isolated.

The single incompletely excavated large pit, for which even an approximate estimate of the dimensions could not be made, was situated in house structure 6. The pit, which had a depth of 6 inches, a flat floor, and near-vertical walls, was filled with ash.

Eighteen of the 37 large pits contained more than 15 artifacts. The range was 16 to 1,071 with a mean of 258.3 items.

Pot concentrations (Plate VI, figs. b, c)

Five features encountered were designated as pot concentrations. The pot concentrations represented small pits which incorporated a pot as a storage or cooking element. It would appear that a vessel was placed in a small pit which was already half filled with mottled sand or ash. As a result of plough action, however, the rim and neck portions of these vessels were generally missing, and the majority of the sherds pertained to the body of the vessel. Of the five pot concentrations, four were circular, ranging from 10 inches to 17 inches in diameter with a mean of 13 inches, and one (pot concentration 5) was ovate measuring 36 inches by 30 inches. Unfortunately the depth below the subsoil surface was available for only two of these features. Apparently through an oversight, the depths of pot concentrations 1 and 2 were never taken, while in the case of pot concentration 3 the profiles containing the pertinent information were lost. The depths of pot concentrations 4 and 5 were 10 inches and 9 inches, respectively. Profile form was always basin

shaped. With rare exceptions, the artifact content of these features was represented solely by fragments from individual vessels. The sherd frequency ranged from 39 to 162 with a mean of 79.2. There were two pot concentrations each in house structures 2 and 3, and the remaining pot concentration crossed the walls of house structures 3 and 7.

ISOLATED HEARTH FLOOR

A single, fire-reddened sand area characteristic of the central hearths of the house structures was located in unit B, isolated from either definite or tentative house structures. The hearth had been partly removed during the 1961 excavations, but its width appeared to have been 26 inches. The absence of a clustering of small pits around this feature reinforces the proposal that it was isolated from a house structure. An 11-foot-long line of posts to the north of the hearth would have acted as a windbreak against a north wind, although another line of posts angling from the first line in a southerly direction probably would have cut across the portion of the hearth excavated in 1961. The association of these lines of posts with the hearth is not demonstrable.

CACHE (Plate VI, fig. d)

A cache of three unfinished celts was located in unit A. There was no evidence of a pit outline, and the celts were found in what appeared to be clean sand. Two celt blanks were fairly advanced in their manufacture and possessed complete flaking and the beginnings of pecking and grinding. Both specimens were broken, but another celt fragment uncovered from the plough zone of unit A fitted one of the fragments to make a complete specimen. The remaining specimen had only pecking along its four edges.

Before beginning the analysis of the artifacts it may be of value to repeat, in part, a summary of the *Ontario Iroquois Tradition* in order that the position of the Bennett site may be evaluated within the broader context of the tradition.

"The Ontario Iroquois Tradition is divided into three stages on the basis of the major processes that are apparently involved in the tradition. The Early Ontario Iroquois stage, which can be traced from approximately A.D. 1000 to A.D. 1300, represents the converging stage of the tradition. During this stage, two complexes, the Glen Meyer branch in southwestern Ontario and the Pickering branch in southeastern Ontario, were developing in relative isolation to one another. The Middle Ontario Iroquois stage is initiated by the conquest of the Glen Meyer branch by the Pickering branch as well as by the uninterrupted development of the latter branch in southeastern Ontario. These events resulted in a widespread, homogeneous complex called the Uren substage, which covered most of Southern Ontario and a portion of southwestern New York. Developing directly out of the Uren substage, with the addition of an elaborate pipe complex, is the Middleport substage. As these two substages (Uren and Middleport) do not appear to have a combined time span in excess of 100 years, the Middle Ontario Iroquois stage is regarded as the horizon stage of the tradition. The Late Ontario

Iroquois stage involves the divergence of the four historic tribes from a common Middleport substage base beginning by A.D. 1400 and terminating with the destruction of the Huron, Petun, Neutral, and Erie in the mid-17th century by the League of Five Nations. This stage is regarded as the divergence stage of the tradition" (Wright 1966: xii).

The Bennett site is a late Pickering branch site that was very likely involved in the proposed conquest of the Glen Meyer branch of southwestern Southern Ontario. One of the two major purposes of this report is to demonstrate that a conquest, with some subsequent assimilation, did indeed take place. The other major purpose is to describe in detail a site which is an early representative village of a population that achieved the greatest expansion of the Ontario Iroquois Tradition and that laid the cultural base for the development of the Huron-Petun and Neutral-Erie branches.

CHAPTER TWO

Analysis

CERAMIC

Attribute analysis was used in the examination of the ceramics in order to obtain the maximum possible amount of information. The advantages of this form of analysis over type analysis are greater consistency, continuity, and accuracy, and these strengths are particularly needed in the study of Iroquois prehistory where a proliferation of pottery types is beginning to disrupt effective communication (Wright 1967). In addition, attribute analysis is best suited to the interpretative aims of the study, which deals with the relationship between closely related bodies of data. To maintain an effective control over the mass of minute data involved in attribute analysis, first the rim sherds were segregated into classes on the basis of the dominant exterior decorative technique and then the attributes pertaining to seven aspects of the rim sherds within each class were recorded. The aspects of the rim sherds are exterior rim, interior rim, lip of rim, punctating, profile form, castellations, and miscellaneous.

The attributes considered with reference to the rim exterior, interior, and lip are decorative technique and motif.

Punctating refers to all punctates which are associated with exterior bosses or which are vestigial survivals of the bossing attribute. The punctates are frequently found on the interior rim where they may or may not push out exterior bosses below the exterior rim decoration. More rarely, exterior punctates, which do not produce interior bosses, are present and segregate the individual exterior bosses from one another. The attribute or attribute combinations considered are as follows: exterior boss, incipient exterior boss, punctate segregated exterior boss, and interior punctate without exterior boss. As bossing is an attribute which steadily decreases in time throughout the Ontario Iroquois Tradition (Wright 1966), it was deemed advisable that the incipient bosses be separated from the obvious bosses as the difference might reflect the gradual weakening of the bossing attribute. An incipient boss, as the name implies, is not readily apparent from a casual examination of the sherd exterior, but it can be detected as a gentle exterior swelling correlative with an interior punctate. The interior punctate without corresponding exterior boss is regarded as a logical extension of the gradual loss of the bossing technique.

Rim profile varieties in Figure 5 represent modal forms, and the range of variation is not presented, particularly with reference to lip angle.

Castellation varieties are illustrated in Figure 6. The decorative motif below the castellation was used as the criterion for establishing the castellation varieties. All the castellations were incipient: of the 57 specimens, which

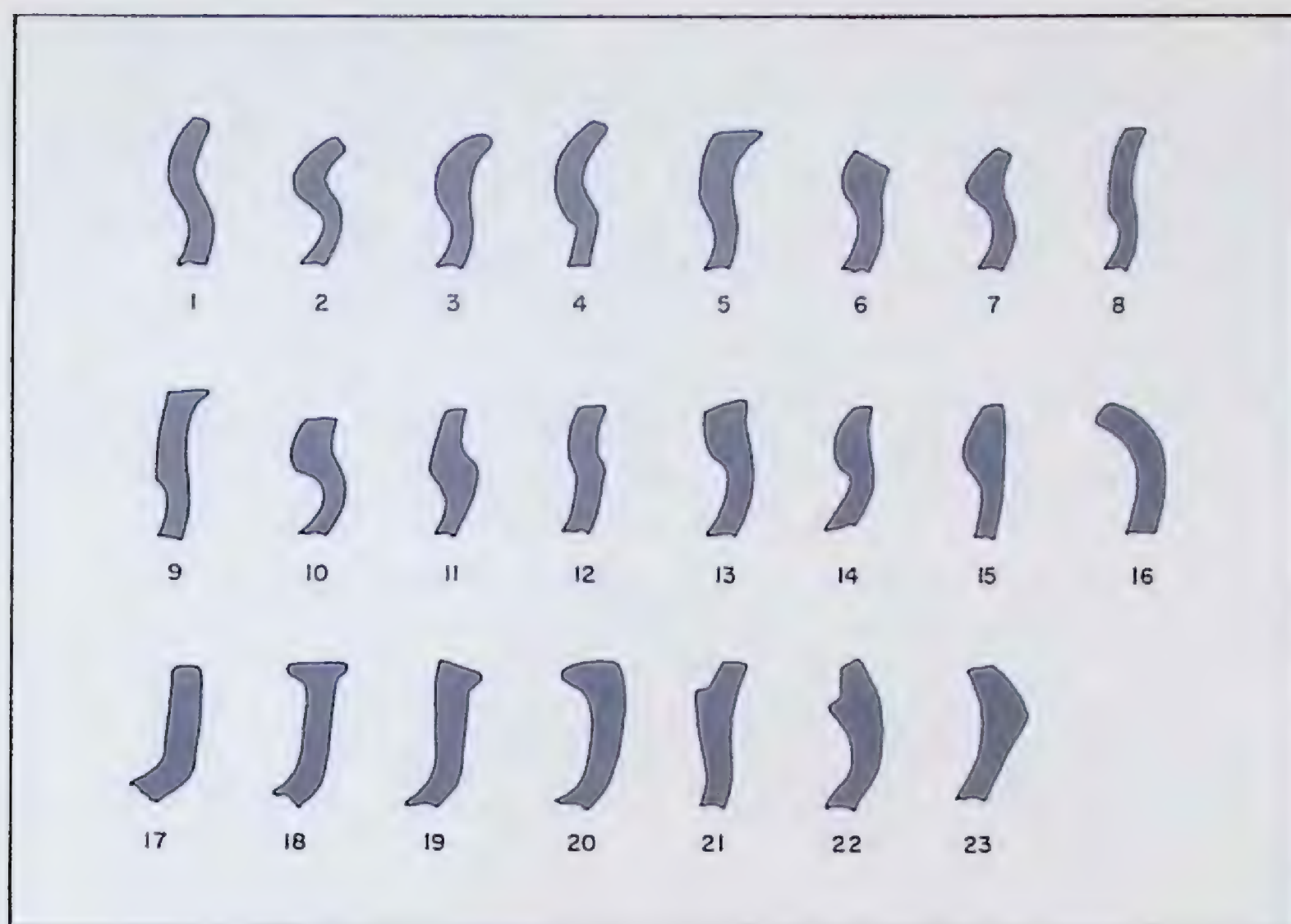


FIGURE 5—*Rim profile varieties*

represented 15.3 per cent of the analysable rim sherds, 36 (63 per cent) were incipient pointed and 21 (37 per cent) were incipient rounded.

Two attributes are considered under miscellaneous, and these are the ladder-plat motif and the use of paint as a decorative element.

The preceding descriptive organization of the rim sherds has been adhered to except where circumstances suggested that an alteration would result in greater clarity without detracting significantly from the data. For example, 27 analysable rims, collectively described under 'combined techniques,' possessed a balanced combination of two or more decorative techniques on the exterior. Where an attribute could not be observed because of breakage, it was listed as 'destroyed.'

RIM SHERDS

Only sherds that appeared to retain the entire exterior decoration were regarded as analysable rim sherds. The numerous rim sherds that did not meet this requirement will be described subsequently under the category 'destroyed rims.' Also the effort was made not to make analysis of more than one rim sherd from any single vessel. In instances where a number of rims obviously were fragments from a single vessel, all but one were excluded from the analysis. There were 372 analysable rims recovered during the 1962 excavations at the Bennett site.

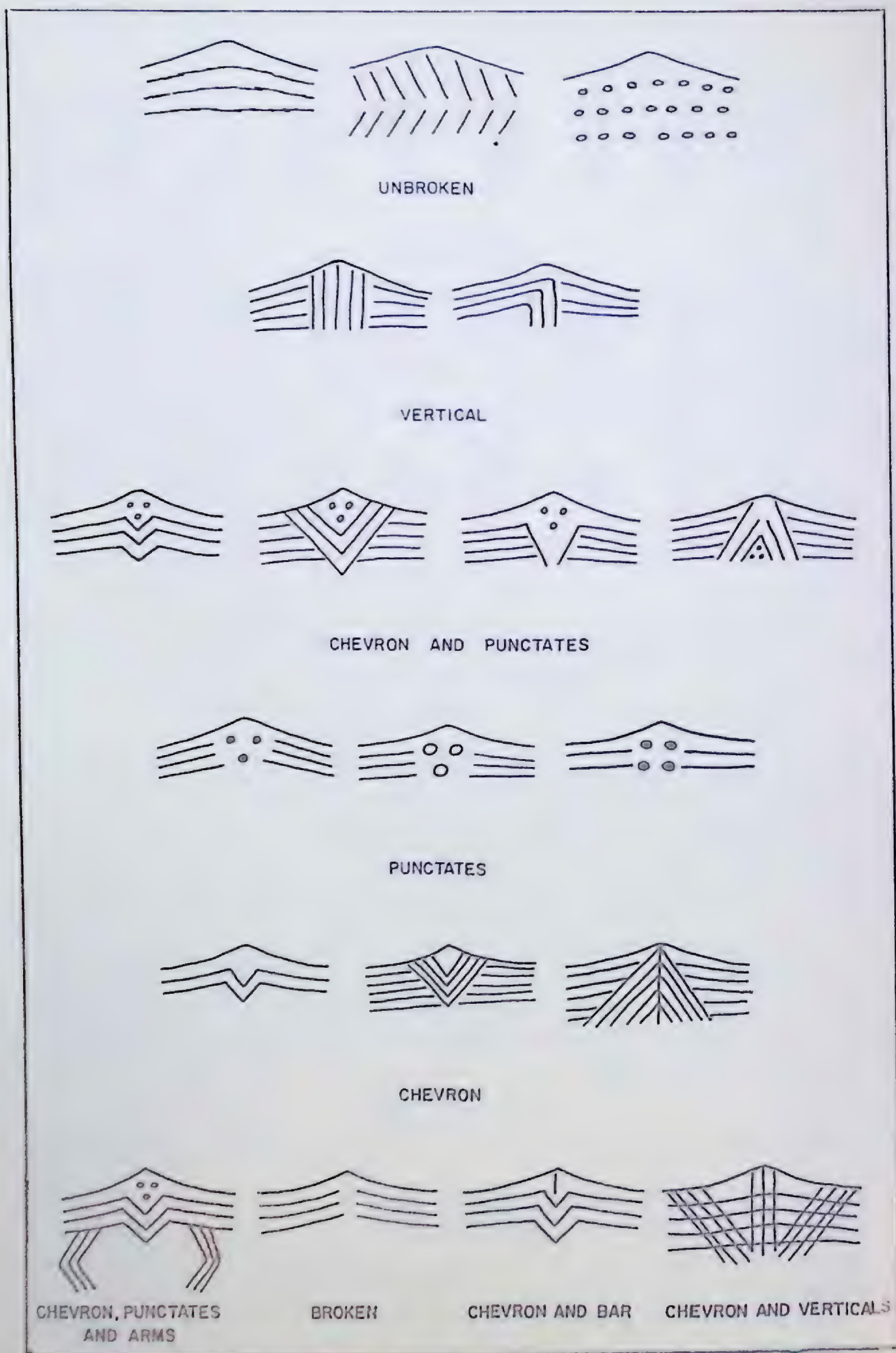


FIGURE 6—Castellation varieties

Push-Pull (Plates VII, VIII)

Technique: The push-pull technique, also called stab-and-drag, is realized by dragging a pointed object across the wet clay and at the same time pushing forward in a short, rhythmic fashion in the opposite direction from the dragging motion. The length of the dragged element relative to the pushed element was variable and resulted in a wide range of expression within the technique. Indeed, some of the specimens from the Bennett site possessed such long drag elements that it was difficult to classify small sherds with reference to the techniques of push-pull or incised. Two sherds were actually decorated with the linear punctate technique (Plate VIII, fig. d), but since this technique is closely related to the push-pull technique, the two specimens have been included under the present category.

Motif: The motifs and techniques of the exterior rim, interior rim, lip of rim, and punctating associated with the bossing attribute are treated individually. Where no comment is made with reference to technique it is to be assumed that the major technique being considered is involved.

Exterior Rim

	<i>f</i>	%
Horizontals	133	64.9
A row of oblique or vertical linear stamp below horizontals	29	14.1
A row of oblique or vertical linear stamp above and below horizontals	12	5.9
A row of oblique or vertical linear stamp above horizontals above inverted V or zig-zag linear stamp above linear stamp chevron or obliques	12	5.9
Horizontals above linear stamp chevrons, obliques, criss-cross, or punctates	9	4.4
A row of oblique or vertical linear stamp above horizontals	6	2.9
Horizontals above a row of oblique linear stamp or punctates above horizontals	2	1.0
Short linear stamp obliques or punctates above horizontals above rows of linear stamp verticals	1	.5
Oblique plat below horizontals	1	.5
Totals	205	100.1

Interior Rim

	<i>f</i>	%
Plain	135	65.9
Oblique linear stamp	28	13.7
Criss-cross linear stamp	21	10.2
Vertical linear stamp	6	2.9
Oblique dragged stamp	5	2.4
Chevron linear stamp	2	1.0

	<i>f</i>	%
Horizontal (one line)	2	1.0
Oblique fingernail impressed	1	.5
Criss-cross dentate stamp	1	.5
Criss-cross linear stamp above obliques	1	.5
Criss-cross incised	1	.5
Destroyed	2	1.0
Totals	205	100.1

Lip of Rim

	<i>f</i>	%
Plain	63	30.7
Encircling line	45	22.0
Oblique linear stamp	36	17.6
Notched interior lip edge	19	9.3
Encircling punctate	11	5.4
Vertical linear stamp	7	3.4
Oblique dragged stamp	5	2.4
Encircling incised	4	2.0
Smoothed-over cord	2	1.0
Oblique dentate	2	1.0
Vertical linear stamp and notched interior lip edge	2	1.0
Oblique linear stamp and encircling line	2	1.0
Encircling fingernail impressed	1	.5
Notched exterior lip edge	1	.5
Encircling incised and notched interior lip edge	1	.5
Exterior and interior lip edge notching	1	.5
Exterior and interior lip edge notching and encircling line	1	.5
Dragged stamp	1	.5
Encircling line and interior lip edge notching	1	.5
Totals	205	100.3

Punctating

	<i>f</i>	%
Exterior boss	37	18.1
Incipient exterior boss	9	4.4
Punctate segregated exterior boss	23	11.2
Interior punctate, no boss	47	22.9
Absent	89	43.4
Totals	205	100.0

Rim profiles: See Figure 5 for rim profile varieties.

Profile Varieties

	<i>f</i>	%
1	67	32.7
2	23	11.2
3	22	10.7
5	11	5.4
6	14	6.8
7	11	5.4
8	2	1.0
9	2	1.0
10	3	1.5
11	3	1.5
12	6	2.9
16	12	5.9
17	14	6.8
19	1	.5
23	1	.5
Destroyed	13	6.3
Totals	205	100.1

Castellations: See Figure 6 for castellation varieties.

Castellation Varieties

	<i>f</i>	%
Vertical	9	4.4
Unbroken	8	3.9
Chevron and punctates	5	2.4
Chevron	3	1.5
Punctates	3	1.5
Chevron, punctates, and arms	2	1.0
Chevron and bar	1	.5
Absent	174	84.9
Totals	205	100.1

Miscellaneous. One example of the ladder plat motif and one of a vertical band of black paint were noted. The ladder plat motif consists of short vertical or oblique linear stamp impressions forming rungs between two parallel lines (Plate X, fig. f). The black paint strips are generally found on the neck of the vessel (Plate XIII, figs. k, l), but in this instance they extend onto the rim.

Linear stamp (Plate XI, figs. e-j)

Technique: The linear stamp technique at the Bennett site was executed primarily with a straight smooth-edged implement, and examples of irregular-edged impressions were rare. The edge of the implement was impressed directly into the clay with little or no evidence of secondary movement.

Motif:

Exterior Rim

	<i>f</i>	%
Opposed obliques	29	43.9
Parallel obliques and/or verticals	23	34.9
Single row of obliques or, rarely, verticals	13	19.7
Single row of obliques above zoned area of push-pull ..	1	1.5
Totals	66	100.0

Interior Rim

	<i>f</i>	%
Plain	34	51.5
Obliques	21	31.8
Verticals	7	10.6
Chevron	1	1.5
Destroyed	3	4.6
Totals	66	100.0

Lip of Rim

	<i>f</i>	%
Plain	25	37.9
Obliques	24	36.4
Verticals	7	10.6
Encircling punctate	3	4.6
Encircling push-pull	2	3.0
Encircling incised	1	1.5
Encircling push-pull and notched interior lip edge	1	1.5
Notched interior lip edge	1	1.5
Obliques and two rows of encircling push-pull	1	1.5
Obliques and encircling push-pull	1	1.5
Totals	66	100.0

Punctating

	<i>f</i>	%
Exterior boss	20	30.3
Incipient exterior boss	5	7.6
Punctate segregated exterior boss	4	6.1
Interior punctate, no boss	5	7.6
Absent	32	48.5
Totals	66	100.1

Rim Profiles: See Figure 5 for rim profile varieties.

Profile Varieties

	<i>f</i>	%
1	14	21.2
2	4	6.1
5	7	10.6
7	5	7.6
10	1	1.5
16	11	16.7
17	8	12.1
18	2	3.0
20	6	9.1
21	1	1.5
22	1	1.5
Destroyed	6	9.1
Totals	66	100.0

Castellations: See Figure 6 for castellation varieties.

Castellation Varieties

	<i>f</i>	%
Unbroken	7	10.6
Absent	59	89.4
Totals	66	100.0

Miscellaneous. One applied bead was noted on an exterior rim (profile variety 22).

Incised (Plate IX)

Technique: Two varieties of incising intergrade to such a degree that they are considered together. In trailing, the stylus drags across the wet clay, whereas in true incising, the stylus cuts sharply into the clay.

Motif:

Exterior Rim

	<i>f</i>	%
Horizontals	9	25.7
Horizontals, with or without linear stamp obliques above inverted V or zig-zag above linear stamp chevron or obliques	9	25.7
Oblique or vertical linear stamp above horizontals	8	22.9

	<i>f</i>	%
Oblique or vertical linear stamp above and below horizontals	4	11.4
Oblique or vertical linear stamp below horizontals	2	5.7
Oblique linear stamp above and below horizontals above chevron or vertical linear stamp	2	5.7
Horizontals above oblique zones of incising	1	2.9
Totals	35	100.0
Interior Rim		
	<i>f</i>	%
Plain	29	82.9
Oblique linear stamp	3	8.6
Vertical linear stamp	1	2.9
Criss-cross linear stamp	1	2.9
Destroyed	1	2.9
Totals	35	100.2
Lip of Rim		
	<i>f</i>	%
Plain	9	25.7
Oblique linear stamp	5	14.3
Encircling push-pull	4	11.4
Oblique linear stamp and encircling line	4	11.4
Notched interior lip edge	3	8.6
Encircling line	3	8.6
Encircling punctate	2	5.7
Vertical linear stamp	2	5.7
Encircling line and notched interior lip edge	2	5.7
Encircling push-pull and notched exterior lip edge	1	2.9
Totals	35	100.0
Punctating		
	<i>f</i>	%
Exterior boss	5	14.3
Incipient exterior boss	1	2.9
Punctate segregated exterior boss	6	17.1
Interior punctate, no boss	5	14.3
Absent	18	51.4
Totals	35	100.0

Rim profiles: See Figure 5 for rim profile varieties.

Profile Varieties	<i>f</i>	%
1	9	25.7
2	3	8.6
3	3	8.6
4	3	8.6
5	4	11.4
7	3	8.6
8	4	11.4
14	1	2.9
17	4	11.4
Destroyed	1	2.9
Totals	35	100.1

Castellations: See Figure 6 for castellation varieties.

Castellation Varieties	<i>f</i>	%
Chevron and punctates	3	8.6
Broken	2	5.7
Unbroken	1	2.9
Punctates	1	2.9
Chevron and verticals	1	2.9
Absent	27	77.1
Totals	35	100.1

Miscellaneous: There were three specimens of the ladder plat motif; one specimen possessed an oblique ladder plat in association with the normal horizontal plat.

Punctate (Plate XI, figs. a–d)

Technique: The technique involves impressing the pointed end of a variously shaped object directly into the clay and removing it completely to make the next impression. The impressions are generally arranged horizontally and bear no relationship to the punctates associated with the bossing attribute. There is a twilight area where the punctate technique is difficult to separate from the push-pull technique because the punctates either are placed closely together or are very slightly dragged.

Motif:

Exterior Rim	<i>f</i>	%
Horizontals	15	78.9
Horizontals above oblique linear stamp	3	15.8
Oblique linear stamp above horizontals	1	5.3
Totals	19	100.0

Interior Rim

	<i>f</i>	%
Plain	13	68.4
Oblique linear stamp	4	21.0
Oblique dentate stamp	1	5.3
Destroyed	1	5.3
Totals	19	100.0

Lip of Rim

	<i>f</i>	%
Plain	8	42.1
Encircling line	4	21.0
Oblique linear stamp	3	15.8
Vertical dentate stamp	1	5.3
Oblique dentate stamp	1	5.3
Encircling push-pull and notched interior lip edge	1	5.3
Encircling push-pull and notched exterior lip edge	1	5.3
Totals	19	100.1

Punctating

	<i>f</i>	%
Exterior boss	4	21.0
Incipient exterior boss	3	15.8
Interior punctate, no boss	5	26.3
Absent	7	36.8
Totals	19	99.9

Rim profiles: See Figure 5 for rim profile varieties.

Profile Varieties

	<i>f</i>	%
1	5	26.3
2	2	10.5
5	3	15.8
7	2	10.5
9	2	10.5
16	1	5.3
19	2	10.5
Destroyed	2	10.5
Totals	19	99.9

Castellations: See Figure 6 for castellation varieties.

Castellation Varieties

	<i>f</i>	%
Unbroken	2	10.5
Chevron and punctates	1	5.3

	<i>f</i>	%
Punctates	1	5.3
Absent	15	78.9
Totals	19	100.0

Dentate (Plate XII, figs. a-d)

Technique: This technique is produced with a toothed implement which leaves closely spaced rectangular or square impressions. Occasionally the tool was impressed obliquely into the clay making an impression reminiscent of the pseudo scallop shell variety of dentate stamp.

Motif:

Exterior Rim

	<i>f</i>	%
Horizontals	5	45.5
Opposed obliques	4	36.4
Parallel obliques	1	9.1
Horizontals above oblique linear stamp	1	9.1
Totals	11	100.1

Interior Rim

	<i>f</i>	%
Plain	6	54.5
Oblique	2	18.2
Criss-cross	1	9.1
Oblique linear stamp	1	9.1
Destroyed	1	9.1
Totals	11	100.0

Lip of Rim

	<i>f</i>	%
Verticals	4	36.4
Obliques	2	18.2
Encircling line	2	18.2
Encircling punctate	1	9.1
Exterior and interior lip edge notching	1	9.1
Plain	1	9.1
Totals	11	100.1

Punctating

	<i>f</i>	%
Exterior boss	2	18.2
Punctate segregated exterior boss	3	27.3

	<i>f</i>	%
Interior punctate, no boss	3	27.3
Absent	3	27.3
Totals	11	100.1

Rim profiles: See Figure 5 for rim profile varieties.

Profile Varieties	<i>f</i>	%
1	6	54.5
3	1	9.1
12	2	18.2
Destroyed	2	18.2
Totals	11	100.0

Dragged stamp (Plate XII, figs. e-g)

Technique: The dragged stamp is produced with a toothed tool (dentate stamp implement) used in a push-pull fashion and, as such, the technique represents a variety of the push-pull technique.

Motif:

Exterior Rim	<i>f</i>	%
Horizontals	3	60.0
Oblique linear stamp above horizontals	2	40.0
Totals	5	100.0

Interior Rim	<i>f</i>	%
Plain	5	100.0

Lip of Rim	<i>f</i>	%
Encircling push-pull	2	40.0
Oblique linear stamp	1	20.0
Oblique linear stamp and encircling push-pull	1	20.0
Plain	1	20.0
Totals	5	100.0

Punctating	<i>f</i>	%
Exterior boss	2	40.0
Incipient exterior boss	1	20.0
Interior punctate, no boss	1	20.0
Absent	1	20.0
Totals	5	100.0

Rim profiles: See Figure 5 for rim profile varieties.

Profile Varieties

	<i>f</i>	%
7	1	20.0
14	4	80.0
Totals	5	100.0

Castellations: See Figure 6 for castellation varieties.

Castellation Varieties

	<i>f</i>	%
Unbroken	2	40.0
Absent	3	60.0
Totals	5	100.0

Plain (Plate XII, figs. h, i)

Motif:

Exterior Rim

Exteriors are smooth except for one specimen (Plate XII, fig. i), which possesses smoothed-over cord malleation. This specimen closely resembled the Woodsmen Corded pottery type (Wright 1966: 121-122). For purposes of general comparison the cord malleated specimen is separated from the other plain rims in Tables 3 and 16.

Interior Rim

	<i>f</i>	%
Oblique linear stamp	1	25.0
Plain	3	75.0
Totals	4	100.0

Lip of Rim

	<i>f</i>	%
Oblique linear stamp	1	25.0
Plain	3	75.0
Totals	4	100.0

Punctating

	<i>f</i>	%
Exterior boss	1	25.0
Absent	3	75.0
Totals	4	100.0

Rim profiles: See Figure 5 for rim profile varieties.

Profile Varieties

	<i>f</i>	%
1	2	50.0
6	1	25.0
Destroyed	1	25.0
Totals	4	100.0

Castellations: 3 specimens

Combined Techniques (Plate X)

Technique: As the name indicates this catch-all category incorporates the rims from the Bennett site where two or more decorative techniques appear to be of relatively equal importance in forming the exterior rim decoration. The following combinations of techniques were segregated in order to describe the exterior rim motif: push-pull and linear stamp (14); incising and linear stamp (5); punctate, linear stamp, and push-pull (3); push-pull, incising, and linear stamp (2); punctate and push-pull (1); push-pull and dragged stamp (1); and dentate stamp and incising (1).

Motif:

Exterior Rim

	<i>f</i>	%
<i>Push-pull and linear stamp</i>		
A horizontal line of push-pull between oblique rows of linear stamp	5	18.5
Horizontal line of push-pull above linear stamp obliques	3	11.1
Horizontal line of push-pull above linear stamp chevron	3	11.1
Oblique linear stamp above a horizontal line of push-pull above linear stamp chevron	1	3.7
Oblique linear stamp above horizontal line of push-pull, repeated	1	3.7
Criss-cross linear stamp above two horizontal lines of push-pull above linear stamp criss-cross	1	3.7
<i>Incising and linear stamp</i>		
Horizontal incised line or lines above opposed oblique linear stamp	3	11.1
Oblique linear stamp above a horizontal line of incising above opposed or parallel oblique linear stamp	2	7.4
<i>Punctate, linear stamp, and push-pull</i>		
A line of punctate above a line of push-pull above linear stamp criss-cross	1	3.7

	<i>f</i>	<i>%</i>
A line of push-pull above vertical linear stamp above a line of punctates	1	3.7
A line of push-pull above linear stamp chevron above a line of punctates	1	3.7
<i>Push-pull, incising, and linear stamp</i>		
Oblique linear stamp above horizontal push-pull above horizontal incising above inverted V and linear stamp chevron or obliques	2	7.4
<i>Punctate and push-pull</i>		
Horizontal push-pull broken by two rows of double punctates	1	3.7
<i>Push-pull and dragged stamp</i>		
Horizontal push-pull above a line of dragged stamp	1	3.7
<i>Dentate stamp and incising</i>		
Oblique dentate stamp above horizontal incising	1	3.7
Totals	27	99.9

Interior Rim

	<i>f</i>	<i>%</i>
Plain	22	81.5
Oblique linear stamp	4	14.8
Vertical dentate stamp	1	3.7
Totals	27	100.0

Lip of Rim

	<i>f</i>	<i>%</i>
Plain	19	70.4
Encircling push-pull	2	7.4
Encircling incised	2	7.4
Oblique linear stamp and encircling incised	2	7.4
Oblique linear stamp	1	3.7
Vertical dentate stamp	1	3.7
Totals	27	100.0

Punctating

	<i>f</i>	<i>%</i>
Exterior boss	2	7.4
Punctate segregated exterior boss	2	7.4
Interior punctate, no boss	3	11.1
Absent	20	74.1
Totals	27	100.0

Rim profiles: See Figure 5 for rim profile varieties.

Profile Varieties

	<i>f</i>	%
1	6	22.2
2	3	11.1
7	4	14.8
8	2	7.4
10	1	3.7
14	2	7.4
15	1	3.7
16	4	14.8
17	1	3.7
21	2	7.4
Destroyed	1	3.7
Totals	27	99.9

Castellations: See Figure 6 for castellation varieties.

Castellation Varieties

	<i>f</i>	%
Unbroken	2	7.4
Absent	25	92.6
Totals	27	100.0

TABLE 3—*Rim sherd classification*

Rim sherd category	<i>f</i>	%
Push-pull.....	205	55.1
Linear stamp.....	66	17.7
Incised.....	35	9.4
Punctate.....	19	5.1
Dentate stamp.....	11	3.0
Dragged stamp.....	5	1.3
Plain.....	3	0.8
Cord malleated.....	1	0.3
Combined techniques.....	27	7.3
Totals.....	372	100.0

Destroyed Rim Sherds

There were 390 rim sherds which were classified as destroyed because they had broken off a short distance below the lip, and, therefore, the complete exterior design was not observable. The attributes of the interior rim, lip of rim, and castellations were intact, however, and they have been recorded in Tables 4, 5, and 6.

TABLE 4—Interior design attributes of the destroyed rims

Attributes	Destroyed rim sherd category								Totals	
	Push-pull		Linear stamp		Incised		Punctate		f	%
	f	%	f	%	f	%	f	%		
Plain.....	181	74.2	15	50.0	60	81.1	32	76.2	288	73.8
Oblique linear stamp.....	35	14.3	12	40.0	4	5.4	8	19.0	59	15.1
Criss-cross linear stamp.....	13	5.3	1	3.3	7	9.5	-	-	21	5.4
Vertical linear stamp.....	6	2.5	2	6.7	-	-	-	-	8	2.1
Horizontal dragged stamp.....	5	2.1	-	-	2	2.7	1	2.4	8	2.1
Criss-cross dentate stamp.....	2	.8	-	-	-	-	-	-	2	.5
Linear stamp chevron.....	1	.4	-	-	1	1.4	-	-	2	.5
Oblique dentate stamp.....	1	.4	-	-	-	-	1	2.4	2	.5
Totals.....	244	100.0	30	100.0	74	100.1	42	100.0	390	100.0

TABLE 5—*Lip design attributes of the destroyed rims*

Attributes	Destroyed rim sherd category								Totals	
	Push-pull		Linear stamp		Incised		Punctate		f	%
	f	%	f	%	f	%	f	%		
Plain.....	84	34.4	10	33.3	18	24.3	24	57.1	136	34.9
Oblique linear stamp.....	57	23.4	14	46.7	28	37.8	1	2.4	100	25.6
Encircling push-pull.....	50	20.5	1	3.3	8	10.8	2	4.8	61	15.6
Encircling punctate.....	20	8.2	—	—	2	2.7	7	16.7	29	7.4
Notched interior lip edge.....	11	4.5	1	3.3	2	2.7	—	—	14	3.6
Vertical linear stamp.....	7	2.9	3	10.0	—	—	4	9.5	14	3.6
Oblique dentate stamp.....	4	1.6	—	—	—	—	—	—	4	1.0
Vertical dragged stamp.....	3	1.2	1	3.3	—	—	—	—	4	1.0
Oblique linear stamp and encircling push-pull.....	3	1.2	—	—	6	8.1	—	—	9	2.3
Encircling incised.....	2	.8	—	—	4	5.4	—	—	6	1.5
Encircling punctate and notched interior lip edge.....	2	.8	—	—	—	—	—	—	2	.5
Smoothed-over cord.....	1	.4	—	—	—	—	1	2.4	2	.5
Oblique linear stamp and encircling lines of push-pull and incising.....	—	—	—	—	—	—	—	—	—	—
Oblique linear stamp and encircling incising.....	—	—	—	—	2	2.7	—	—	2	.5
Vertical linear stamp and encircling push-pull.....	—	—	—	—	4	5.4	—	—	4	1.0
Notched interior lip edge and encircling push-pull.....	—	—	—	—	—	—	1	2.4	1	.3
	—	—	—	—	—	—	2	4.8	2	.5
Totals.....	244	99.9	30	99.9	74	99.9	42	100.1	390	99.8

TABLE 6—*Castellation attributes of the destroyed rims*

Castellation variety	Destroyed rim sherd category						Totals	
	Push-pull		Incised		Punctate			
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Chevron and punctates..	5	33.3	—		1	33.3	6	27.3
Unbroken.....	4	26.6	—		1	33.3	5	22.7
Vertical.....	2	13.3	1	25.0	—		3	13.6
Chevron and verticals....	—		3	75.0	—		3	13.6
Broken.....	2	13.3	—		—		2	9.1
Chevron.....	2	13.3	—		—		2	9.1
Punctates.....	—		—		1	33.3	1	4.6
Totals.....	15	99.8	4	100.0	3	99.9	22	100.0

Neck Sherds (Plate XIII excluding fig. j)

The neck sherds were separated from the body sherds on the basis of curvature. In most instances the neck sherds possess a markedly concave exterior in contrast to the convex to straight exteriors of the body sherds. Four decorative techniques are represented in the decorated category, and their frequency and motifs are as follows: linear stamp (opposed obliques—8, criss-cross—4, parallel obliques—3, and indeterminable—2); push-pull (oblique plats—3, horizontals—2, and horizontals and V plats—1); incised (obliques—3, horizontals—2, and obliques and horizontals—1); and dentate stamp (oblique plats—4).

TABLE 7—*Neck sherd surface treatment techniques*

Surface treatment	<i>f</i>	%
Plain.....	1,251	86.9
Ribbed paddle.....	97	6.7
Smoothed-over cord.....	38	2.6
Decorated.....	33	2.3
Scarified.....	13	.9
Check stamp.....	5	.4
Painted.....	3	.2
Totals.....	1,440	100.0

The three painted neck sherds consist of plain necks possessing a single vertical band of black paint. The band widths on the two specimens that could be measured are 3 mm and 16 mm. The remaining surface treatment techniques in Table 7 will be discussed subsequently in conjunction with the body sherd analysis.

Shoulder Sherds (Plate XIII, figs. a-c, f-i)

Ten per cent (145) of the neck sherds include the juncture of the neck and the body of the vessel and can therefore be examined with reference to the attributes of the shoulder of the vessel. This relatively low frequency of a distinguishable shoulder region strongly suggests that in the majority of cases there is no clear demarcation between the neck and body areas of the Bennett site vessels. In the majority are the incipient shoulders which represent 85 per cent (123) of the 145 specimens. The remaining 15 per cent (22) are carinated, and a clearly demarcated ridge separates the neck region from the body region. The majority of the latter specimens, however, are not strongly carinated.

TABLE 8—*Shoulder sherd varieties and surface treatment techniques*

Surface treatment	Shoulder variety	
	Incipient (<i>f</i>)	Carinated (<i>f</i>)
Plain.....	51	12
Plain neck, ribbed paddle body.....	31	4
Decorated.....	6	4
Plain neck, check stamp body.....	9	1
Plain neck, smoothed-over cord body.....	8	1
Ribbed paddle.....	7	—
Smoothed-over cord.....	5	—
Check stamp.....	2	—
Scarified.....	1	—
Plain neck, scarified body.....	1	—
Smoothed-over cord neck, check stamp body.....	1	—
Check stamp neck, ribbed paddle body.....	1	—
Totals.....	123	22

Body Sherds

Body sherds smaller than a quarter or with sloughed-off surfaces were excluded from the analysis. On the remaining 4,905 analysable body sherds the following surface treatment techniques were recorded: plain, ribbed paddle, check stamp, smoothed-over cord, scarified, cord malleated, and fabric impressed.

Plain (2,547). The plain body sherds have been carefully smoothed although signs of earlier surface treatment techniques are frequently in evidence. In every instance, however, the accurate identification of the earlier technique has been obliterated by the final smoothing of the vessel surface.

A single plain body sherd possessed a narrow and irregular band of black paint.

Ribbed paddle (1,842). The stamp involved in this technique produces a series of parallel grooves that gives the vessel surface a corrugated appearance. Either a grooved paddle or a paddle lashed with sinew could have

been used to produce the impressions. Generally, the impressions run horizontally, although cases of oblique and overlapping or criss-cross impressions do occur.

Check stamp (221). This surface treatment technique appears to have been realized by impressing a waffle-iron-like stamp into the clay. The impressions range from square to rectangular and are generally 5 mm wide. A final smoothing had made many of the impressions both indistinct and irregular in shape.

Smoothed-over cord (220). Both cord malleation and fabric impression appear to be represented in this technique, although the final smoothing has obscured the original impressions so that an accurate separation was not possible.

Scarified (52). It would appear that the scarified surface treatment technique resulted from the vessel surface having been roughly brushed with a handful of stiff grass and/or twigs. Most frequently the impressions occur horizontally on the vessel. In some instances it was difficult to classify a sherd as either scarified or ribbed paddle.

Cord malleated (17). This technique was probably produced with a cord-wrapped paddle as indicated by the parallel and spaced cord impressions. Most frequently the individual cords had been only slightly twisted.

Fabric impressed (6). It was possible to obtain relatively clear plasticine impressions of these sherds, and in all cases a twined fabric appeared to be involved.

TABLE 9—*Body sherd surface treatment techniques*

Surface treatment	<i>f</i>	%	Thickness (mm)	
			Range	$\bar{x}$
Plain.....	2,547	51.9	3-19	8.0
Ribbed paddle.....	1,842	37.6	3-18	7.5
Check stamp.....	221	4.5	3-15	6.5
Smoothed-over cord.....	220	4.5	4-15	7.5
Scarified.....	52	1.1	4-16	7.4
Cord malleated.....	17	.3	3-11	6.7
Fabric impressed.....	6	.1	4-10	7.0
Totals.....	4,905	100.0		

Juvenile Ceramics (Plate XIV, figs. a-j)

Fragments regarded as the product of juveniles learning the art of pottery manufacturing consisted of 97 rim sherds and 55 body sherds. The relatively low frequency of body sherds probably is the result of the small size of the vessels where one body sherd might actually account for half the vessel. Also a number of the body sherds were likely incorporated into the body sherd analysis of adult vessels. An expected evolution of competency is

apparent in the sherds, and although motifs vary from the norm on the crudest specimens, the decorative techniques are those found on the adult vessels.

Ceramic Wastage

Ceramic wastage is represented by eight balls of unfired clay lacking temper, 22 smaller lumps and fragments of fired clay with and without temper, and two moulded fragments possessing rectangular cross-sections.

Gaming Discs (Plate XIV, figs. k-o)

Of the 22 pottery gaming discs 18 are relatively complete. All were manufactured from body sherds, roughly chipped around the edges to approximate a circular shape. Only eight specimens exhibit signs of extensive grinding around the edge. Five varieties are present; these are as follows: unmodified on the face—15 (Plate XIV, figs. l, m); non-perforating centrally drilled depression on one face—3 (Plate XIV, fig. k); central biconvexly drilled hole—2 (Plate XIV, fig. n); non-perforating drilled depression at the edge—1 (Plate XIV, fig. o); and perforation at the edge—1. Nineteen specimens could be measured for their approximate diameters, which range from 19 mm to 49 mm with a mean of 32.8 mm.

Pipes (Plate XIV, figs. p-aa)

Pipes were scarce at the Bennett site, and they were simple in form and decoration and crude in manufacture relative to the pipe complex found on later Iroquois sites. The 71 specimens and fragments recovered consist of the following: seven relatively complete pipes or pipe bowls; 14 bowl fragments including a portion of the lip; 19 lower bowl and elbow fragments; and 31 pipe stem and stem fragments. Of the seven relatively complete specimens or bowls, only two are decorated. One has a single encircling horizontal line of push-pull directly below the lip (Plate XIV, fig. r), and the other possesses three such lines on the bowl as well as notches along the lateral edges of the stem and single incised lines on the dorsal face of the stem adjacent to the notches (Plate XIV, fig. p). The juncture of the bowl and stem forms an obtuse angle in six pipes and a right angle in one pipe (Plate XIV, fig. s). Bowl shapes are roughly cylindrical except for fig. t which is bulbous. The four observable stem cross-sections are rectangular, circular, triangular, and semi-circular. Pipe bowl orifices range from 11 mm to 15 mm in diameter with a mean of 12.7 mm. The 14 small pipe bowl fragments included two decorated specimens. Fig. w on Plate XIV possesses vertical to slightly oblique lines of punctates, and the remaining specimen has encircling horizontal incised lines below the lip. This latter specimen is so small that it may actually be a rim sherd from a juvenile vessel. Bowl shapes are cylindrical (7), bulbous (3), indeterminable (3), and square or rectangular (1). Little can be said about the 19 lower bowl and elbow fragments except that one specimen appears to be of the same form as fig. p, Plate XIV, and possesses evidence of red paint on the ventral surface. Of the 31 pipe stems and stem fragments, 18 were sufficiently intact to determine the cross-section form. These cross-sections are as follows: circular

(7), semi-circular (3), diamond (3), rectangular or square (3), and flattened ovate (2). Wherever the stem hole was observable, it had been produced by the burnt-out reed method. One stem fragment appears to be the handiwork of a juvenile, and another fragment possesses oblique flats executed by punctating on all remaining surfaces. Finally, one small fragment (Plate XIV, fig. aa) has a notch cut out of its surviving corner to produce a nipple mouthpiece.

LITHIC

Projectile Points (Plate XV, figs. a-k)

The arrowheads from the Bennett site fall within two general categories: triangular (12 specimens), and incipient side-notched triangular (5 specimens). Two specimens in each category are fragmentary. In addition to the 17 analysable arrowheads, there are nine tip fragments, two mid-section fragments, and one base corner fragment. On Plate XV, figs. a to g and i illustrate the triangular points, and figs. h, j, and k show the range of the incipient side-notched triangular points.

With reference to the triangular points, one complete specimen (Plate XV, fig. a) and a basal fragment appear to relate to the Levanna point type (Ritchie 1961: 31-32), whereas the remaining points in the triangular category are most similar to the Madison point type (*ibid.*, p. 33-34). Figs. f and g on Plate XV, however, do appear to represent extreme variants within the latter type. Fig. f also possesses strong basal grinding. All these points have fine bifacial flaking and a biconvex cross-section except for fig. e, which is more plano-convex in cross-section. Basal thinning occurs on eight specimens.

The incipient side-notched triangular points show a wide range of variation, and it is only the presence of the incipient side-notches and a general triangular shape which allows them to be grouped as a category. These points are bifacially flaked and are biconvex in cross-section, except for fig. j where the minimal retouch is restricted to the edges and the cross-section is trianguloid. On all the points, except fig. h, the side-notching is shallow and indistinct. The notching on fig. h is so shallow and broad that the specimen could be referred to as either a side-notched point or an expanding stem point. Three points possess basal thinning.

Biface Blades (Plate XV, figs. l, m)

Biface blades are represented by two complete blades, six bases, three points, and five edge fragments. One complete specimen with a straight (striking platform) base and convex blade edges is illustrated on Plate XV, fig. l. Its length, maximum width, and thickness measurements are 57 mm, 41 mm, and 11 mm, respectively. The remaining complete specimen is asymmetrically triangular in shape, has a concave base, and may represent a projectile point that had been modified into a knife. Length, maximum width, which is also base width, and thickness are 36 mm, 28 mm, and 7 mm, respectively. Three bases are convex with straight blade edges, two bases are straight (one with straight blade edges and the other with convex blade

TABLE 10—Form and metrical attributes and weights of the projectile points

Category	Frequency	Base form			Blade edge form				Length (mm)			Base width (mm)			Thickness (mm)			Weight (gm)		
		Straight	Concave	Convex	Straight	Concave	Convex	Straight/Convex	Frequency	Range	Mean	Frequency	Range	Mean	Frequency	Range	Mean	Frequency	Range	Mean
Triangular.....	12	4	5	2	8	1	1	1	11	22-50	35.4	11	14-35	21.0	12	3-5	4.2	10	1.0-5.0	2.7
Side-notched triangular.....	5	2	2	1	1	2	-	-	3	19-49	33.3	4	14-21	17.0	5	4-5	4.4	3	1.2-4.9	2.8

edges), and a single base has bevelling towards one edge and on the horizontal resembles the lateral half of a semi-lunar blade. Basal widths of the base fragments range from 21 mm to 43 mm with a mean of 30.2 mm and thicknesses range from 5 mm to 9 mm with a mean of 7.0 mm.

Drills

Two implements were recovered which are thought to have functioned as drills. Both are blunt at the bit end, and evidence of abrasion is readily apparent. One specimen is completely bifacially flaked, whereas the other possesses only bifacial retouch along the two converging edges. The drills are trianguloid in shape, and length, maximum width (basal), and thickness measurements are 28 mm, 12 mm, 7 mm, and 24 mm, 15 mm, 6 mm, respectively.

Scrapers (Plate XV, figs. n-hh)

Scrapers were the most frequent class of stone artifact found at the Bennett site. The 140 specimens consisted of the following varieties in order of frequency: side scrapers 61 (43.6); random scrapers 31 (22.1); end scrapers 30 (21.4); spokeshaves 6 (4.3); saws 2 (1.4); circular scraper 1 (0.7); and fragments 9 (6.4). Spokeshaves and saws have been included under the scraper category as their plano-convex cross-sections and the nature of their worked edges suggest that they were involved in a similar cutting and scraping function inferred for scrapers.

Two varieties of side scrapers are established on the basis of the retouch pattern. The standard side scraper (Plate XV, figs. x-aa,cc,dd) consists of a long flake, generally rectanguloid in shape, with retouch running along one or both of the long sides. The triangular side scraper (Plate XV, fig. bb) usually is represented by a single retouched edge which converges to a point at an oblique angle relative to the unretouched long side of an asymmetrically triangular flake. When retouch occurs along both edges, it converges to a point.

The random flake scrapers (Plate XV, figs. ee, ff) consist of irregular flakes with one or more retouched edges. Twenty-six specimens possess a single retouched edge, and five specimens have two retouched edges. Length of scraping edge ranges from 9 mm to 22 mm with a mean of 14.9 mm.

The end scrapers have been separated into the following four varieties: simple (24), blade (3), Glen Meyer (2), and side notched (1).

The simple end scraper, or thumbnail scraper, characteristically has the major scraping face at one end, and, although there is a wide range in form, the general shape tends to be triangular with the major scraping face forming the base of the triangle (Plate XV, figs. r-v). Only one of the simple end scrapers possesses ventral retouch, and one specimen had been used as a wedge. Five specimens possess retouch along both edges as well as on the end, three specimens have retouch along one side and on the end, and the remainder have a scraper face at the end only. Flake length of the simple end scrapers ranges from 15 mm to 36 mm with a mean of 24.5 mm, maximum width of the end scraping face ranges from 13 mm to 22 mm with a mean of 17.6 mm, and height of the end scraping face ranges from 1 mm to 8 mm with a mean of 4.3 mm.

TABLE 11—Form and metrical attributes of the side scrapers

Variety	Flake length (mm)			Scraping edge length (mm)			Height of scraping face (mm)			No. of scraping faces	
	Frequency	Frequency	Mean	Frequency	Range	Mean	Frequency	Range	Mean	One	Two
Standard.....	46	46	27.5	58	12-34	21.2	58	1-4	2.1	34	6
Triangular.....	15	15	23.5	18	14-24	18.3	18	1-3	1.9	12	3

The blade end scraper consists of a triangular biface blade with the base modified into a scraper face (Plate XV, figs. o-q). Length, maximum scraping edge width, and height of scraping face ranges and means for the three specimens are 32-41 mm (36.7 mm), 20-25 mm (22.3 mm), and 8-10 mm (8.3 mm), respectively.

One of the two Glen Meyer end scrapers (Wright 1966: 34-35) is illustrated on Plate XV, fig. n. Although neither specimen is completely typical of the Glen Meyer end scraper, both are sufficiently similar to fall within the range, indicating that this particular variety of end scraper was not limited to the Glen Meyer branch of the Ontario Iroquois Tradition. The general form characteristic of this scraper variety is steep retouch on a long, thick flake which frequently results in a sharp dorsal ridge and always produces a very high scraping face. Length, scraping end width, and scraping face height measurements are 39 mm and 47 mm, 22 mm and 21 mm, and 11 mm and 12 mm, respectively.

The single side-notched end scraper (Plate XV, fig. w) is merely a simple end scraper with the addition of side notches. Length, scraping end width, and scraping face height measurements are 24 mm, 20 mm, and 9 mm, respectively.

The six spokeshave scrapers represent random flakes into which one or more narrow concavities had been chipped. These concave scraping areas are thought to have served a spokeshave-like function. One specimen possesses two adjoining concavities which leave an intermediate graver projection. The remaining specimens have a single concavity. In addition to the spokeshave scraping face, four specimens possess single scraping edges. The maximum length of the concavities ranges from 6 mm to 10 mm with a mean of 8.0 mm.

Two specimens, one complete (Plate XV, fig. hh) and one consisting of an edge fragment, have been interpreted as saws. Both possess a straight serrated edge and a plano-convex cross-section.

The single circular scraper (Plate XV, fig. gg) lacks a portion of the edge, but the scraping face appears to have encircled the entire edge. The scraper measures 24 mm by 22 mm, and the scraper face is 2 mm high.

Wedges (Plate XV, figs. ii-oo)

Sixty-seven relatively complete wedges and fifteen fragments of wedges were present. The wedge appears to represent a general purpose cutting-scraping-gouging tool, which was manufactured and sharpened by placing a thick flake on an anvil and tapping the opposite edge with sufficient force to remove small stepped flakes from both the edge being struck and the edge in contact with the anvil. As a rule the wedges are rectangular to square in shape, although triangular and irregular forms do occur. The crushed ends generally relate to the long axis of the flake. Measurements between the two crushed edges range from 12 mm to 38 mm with a mean of 23.0 mm. The measurement at right angles to the axis of the worked edges, which generally represented the width of the tool, ranges from 6 mm to 32 mm with a mean of 16.9 mm.

Chipping Detritus

Chipping detritus consists of cores (946 grams) and flakes (4,313 grams). With very few exceptions, the material is Lockport flint, which was obtainable 10 miles to the south of the site.

TABLE 12—*Occurrence of chipped stone tool categories including fragments*

Category	<i>f</i>	%
Scrapers.....	140	52.0
Wedges.....	82	30.5
Projectile points.....	29	10.8
Biface blades.....	16	6.0
Drills.....	2	.7
Totals.....	269	100.0

Abraders (Plate XVI, figs. i, j)

Complete and fragmented abraders were represented by 85 flat, angular specimens; 15 split or complete cobbles; and three shaped specimens. All were manufactured from sandstone (medium to fine silty). Forty-six specimens possess evidence of use on one face only, and the remainder have been used on both faces. The former group, however, certainly includes some sloughed-off faces of abraders. There is very little evidence of edge grinding, and it appears that a flat slab of sandstone was simply broken off and used without any further modification, except for six specimens which had been used slightly as anvil stones.

Only four of the cobbles that had been used as abraders were not split longitudinally. Four possess abrading on both faces, and the remainder have a single polished face. In addition, two abraders have weakly developed anvil pits on one face, and another has extensive flaking around its circumference.

Of the three purposefully shaped abraders, two are rectangular (Plate XVI, fig. i) and one, which is incomplete, is asymmetrically triangular. The two rectangular specimens have grinding on both faces and on the edges and a bevelling facet at one end. The remaining abrader possesses overall grinding except along the broken edge.

Celts (Plate XVI, figs. a-d)

The celts are represented by five complete specimens, seven bit fragments, three poll fragments, and sixteen complete and fragmented unfinished celts in various stages of manufacture.

All five complete celts are classified as adzes since they possess an asymmetrically bevelled bit. Three of the specimens were sufficiently large to be used for tree-felling (Plate XVI, figs. a, b), but the remaining two (figs. c, d), both made from flakes, were probably used as chisels. Ranges and means of the length, bit width, maximum width, and thickness measurements for

the larger specimens are 79 to 196 mm (122.3 mm), 32 to 53 mm (39.3 mm), 34 to 72 mm (49.7 mm), and 15 to 46 mm (29.3 mm), respectively. Length, bit width, maximum width, and thickness measurements for the two chisels were 59 mm, 35 mm, 35 mm, 8 mm and 42 mm, 19 mm, 19 mm, 6 mm, respectively. Evidence of the flaking-pecking-grinding manufacturing procedure is apparent on all the specimens.

Five of the seven bit fragments definitely pertain to adzes, and the remaining two fragments are too incomplete to determine whether they possessed an asymmetrically bevelled bit. The bit widths on two specimens are 23 mm and 45 mm.

Of the three poll fragments, one is squared-off and two are rounded.

The sixteen complete and fragmented unfinished celts include the three specimens found as a cache (Plate VI, fig. d, p. 91). Flaking and pecking occur on eleven specimens; flaking and grinding on three specimens; and flaking, pecking, and grinding on two specimens.

In addition to the preceding, there are 18 flakes possessing flaking, pecking, and/or grinding, which were probably derived from both shattered celts and the celt-manufacturing process.

Anvil Stones (Plate XVI, fig. k)

Nine of the seventeen anvil stones are relatively complete. Approximate shapes are as follows: ovate (8), circular (5), rectanguloid (3), and triangular (1). There are seven bipitted specimens, and the remainder have a single anvil pit on one face. Three of the latter group, however, may represent one face of a broken specimen. Hammering facets occur on the edges of twelve anvil stones and in seven instances encircle the entire edge of the tool. Seven anvil stones also appear to have functioned as manos and possess a flat polished face on one or both sides.

Hammerstones (Plate XVI, figs. l, m)

The thirteen hammerstones have the following forms: ovate (5), irregular (5), and elliptical (3). All are complete except for two of the elliptical specimens. Nine hammerstones have a single major hammering facet, two have two facets, and two have three facets. With one exception these facets occur on what is roughly the edge of the tool. On the one exception (Plate XVI, fig. l) the facet is on the face, and the implement may actually represent a small anvil stone.

Manos

Thirteen manos have the following approximate forms: ovate (6), circular (3), rectangular (2), irregular (1), and indeterminable (1). Five specimens possess evidence of use on both faces, and the remainder have a single polished face. Incipient anvil pits are present in six instances, and five manos have hammering facets along the edges. In one case the hammering facet encircles the entire circumference of the tool.

Metate

Pit 41 produced three fragments of a large metate. Although incomplete, the metate appears to have been ovate in shape with a maximum length of 16 inches. Made from fine-grained sandstone flaked around the edges, the implement possesses polished depressions on both faces so that the edge is approximately three inches thick and the centre is 1.25 inches thick.

Polished Slate (Plate XVI, fig. e)

The fragment of a pointed ground slate object has a symmetrically bevelled (bifacial) straight edge, which may have functioned as a knife. The curved edge still bears flake scars that have not been completely obliterated by polishing. In cross-section the implement is approximately ovate acuminate, and the pointed end represents a possible cutting edge.

Steatite Bead (Plate XVI, fig. f)

A fragment of a large, black steatite bead measures 5 mm in thickness and 11 mm in width, and it would have had a diameter of approximately 26 mm.

Steatite Pipe Bowl (Plate XVI, fig. h)

Little can be said about this small steatite fragment other than that it appears to represent a fragment from the bowl of a soapstone pipe. The interior is horizontally scored as opposed to the above steatite bead, which is vertically scored on the interior.

Paintstones (Plate XVI, fig. g)

Nine small red ochre nodules are regarded as paintstones. There is no evidence of faceting or other modification. The nodules are from pit 24.

Crinoid Stem Beads (Plate XVII, fig. bb)

Four fossil crinoid stem sections may have been beads.

TABLE 13—*Occurrence of non-flint stone tool categories including fragments*

Category	<i>f</i>	%
Abraders.....	103	53.1
Celts.....	31	16.0
Anvil stones.....	17	8.8
Hammerstones.....	13	6.7
Manos.....	13	6.7
Paintstones.....	9	4.6
Crinoid stem beads.....	4	2.1
Metate.....	1	.5
Polished slate object.....	1	.5
Steatite bead.....	1	.5
Steatite pipe bowl fragment.....	1	.5
Totals.....	194	100.0

BONE

Awls (Plate XVII, figs. a, b, d-g, q)

Of the 66 awls recovered, 44 are relatively complete, and the remainder consist of ten tip fragments, ten base fragments, and two mid-section fragments. Most common are the awls manufactured from bone splinters with the grinding concentrated at the perforating end of the tool. The twenty-nine splinter awls (figs. a, e) range in length from 33 mm to 134 mm with a mean of 74.5 mm. The remaining 15 complete awls are represented by six fish spine awls (fig. g); four awls with the natural articulation end for a base (figs. b, d); two antler awls with overall grinding (fig. q); two bone awls with overall grinding, one of which possesses a grooved base and resembles a bodkin (fig. f); and a rib fragment with grinding restricted to the tip. These 15 awls range in length from 32 mm to 130 mm with a mean of 65.9 mm.

Worked Deer Phalanges (Plate XVII, figs. s-v)

There are four varieties of worked deer phalanges or toe bones. Most common (16 specimens) are phalanges with the proximal articulation face removed and a hole drilled through the distal articulation face (figs. s, t). Six specimens had the proximal articulation face removed but lacked the drilled hole in the distal face (figs. u, v). The remaining two varieties are represented by one specimen with a hole drilled through the distal articulation face and another specimen with the proximal articulation face removed and the beginning of a drill hole in the distal articulation face. In addition to the preceding 24 specimens, there are two distal end fragments with drilled holes making a total of 26 worked deer phalanges.

Bone Beads (Plate XVII, figs. o, p)

Seven bone beads manufactured from bird and mammal long bones were recovered. Only two specimens are complete and measure 33 mm and 41 mm in length and 9 mm and 4 mm in diameter.

Beaver Incisor Chisels or Knives (Plate XVII, figs. m, n)

Four of the six specimens are split vertically and exhibit evidence of use at the bit end (fig. m). Another incisor has the lingual face removed, evidence of use at the bit edge, and some grinding along the root end. The final specimen has the labial face removed and evidence of extensive use at the bit edge (fig. n).

Worked Antler Tines

Five antler tines possess evidence of modification, but it is difficult to determine their possible function as tools. Three specimens may have functioned as awls, although they appear to be somewhat blunt for effective perforation. Overall grinding is present on one of these specimens. The remaining two worked antler tines consist of tip fragments that have been scraped and ground to produce a sharp, flat point. These may represent fragmented projectile points.

Bone Projectile Points (Plate XVII, figs. c, h)

Each of the three specimens regarded as bone arrowheads appears to represent a different variety. Fig. c, which resembles an awl, has been interpreted as an arrowhead on the basis of an enclosed socket and lateral flange, which suggest that it was hafted on the end of a shaft. Fig. h is a shaped antler tine with an enclosed conical socket. The remaining specimen is a tip fragment with a flat rectanguloid cross-section and a general triangular outline.

Antler Handles (Plate XVII, fig. w)

Two handles were made by breaking an antler a short distance above and below the base and gouging a central socket in the distal end. The depths of the sockets are 12 mm and 44 mm and their respective diameters are 5 mm and 13 mm.

Antler Flakers (?) (Plate XVII, fig. l)

Both specimens possess a modified base and evidence of faceting at the tip. The lengths of the tools are 72 mm and 78 mm.

Bone Chisel (Plate XVII, fig. x)

This unusual specimen has overall grinding except on one face. The bit edge is bevelled in a chisel form, but the entire cutting edge has been ground flat for a width of .5 mm. Length, bit width, and thickness measurements are 39 mm, 11 mm, and 5 mm.

Bone Bracelet (Plate XVII, fig. y)

This end fragment of a bone bracelet which was probably manufactured from a rib, possesses a lashing hole as well as two incipient side notches on both edges adjacent to the lashing hole. A series of engraved dots run along one face adjacent to both edges. Thickness is 2 mm.

Decorated Bone

A very small carbonized fragment of decorated bone has zig-zag incisions on one face and oblique incisions on the other face. Of the two surviving edges, one is plain and the other possesses a series of notches spaced 1 mm apart. The notches form short teeth, which are capable of making dentate stamp or dragged stamp impressions. The implement is 2 mm thick.

Worked Rib (Plate XVII, fig. r)

The rib possesses longitudinal striae on both faces, but there is no other indication of modification.

Bone Drill

This specimen is simply a pointed bone splinter which has been used to drill a hole, and as a result, the tip has become circularly pointed from use. The length of the modified tip is 5 mm.

Bone Chisel or Spatula

The specimen consists of a long bone splinter unmodified except at one end where use or grinding has produced a slightly bevelled cutting edge. Length and bit width measurements are 172 mm and 7 mm respectively.

Drilled Antler Fragment (Plate XVII, fig. j)

The fragment is broken at both ends, and one break cuts across a biconvexly drilled hole. The cross-section is rectanguloid.

Miscellaneous Worked Bone

Miscellaneous specimens of worked bone include the following: 6 ground bone fragments, which probably represent portions of broken awls; 5 antler sections, which may have been flakers, though they are too weathered for determining their function with certainty; 3 flat fragments of cut and ground antler of unknown function (Plate XVII, fig. k); 3 flattened bone strips, one of which possesses a squared-off end (Plate XVII, fig. i); and one flaked and ground bone fragment.

Bone Wastage

In the wastage category there are 4 fragments of cut and broken antler; 4 fragments exhibiting scoring, with 3 of the specimens having been broken at the encircling scoring cut; and 3 fragments possessing slot marks.

TABLE 14—Occurrence of bone artifact categories

Category	<i>f</i>	%
Awls.....	66	46.5
Worked deer toe bones.....	26	18.3
Beads.....	7	4.9
Beaver incisor chisels or knives.....	6	4.2
Worked antler tines.....	5	3.5
Projectile points.....	3	2.1
Antler handles.....	2	1.4
Antler flakers (?).....	2	1.4
Chisel.....	1	.7
Bracelet.....	1	.7
Decorated bone.....	1	.7
Worked rib.....	1	.7
Drill.....	1	.7
Chisel or spatula.....	1	.7
Drilled antler.....	1	.7
Miscellaneous.....	18	12.7
Totals.....	142	99.9

FAUNAL

The following species of mammals were identified by Mr. P. M. Youngman of the Zoology Division of the National Museum of Canada and his assistant Mrs. A. M. Rick: *Odocoileus virginianus* (Virginia deer); *Ursus americanus* (black bear); *Canis familiaris* (dog); *Vulpes vulpes* (red fox); *Urocyon cinereoargenteus* (gray fox); *Procyon lotor* (raccoon); *Lutra canadensis* (otter); *Martes pennanti* (fisher); *Martes americana* (marten); *Blarina brevicauda* (short-tailed shrew); *Tamias striatus* (eastern chipmunk); *Tamiasciurus hudsonicus* (red squirrel); *Sciurus carolinensis* (gray squirrel);

Castor fiber (beaver); *Ondatra zibethicus* (muskrat); and *Marmota monax* (woodchuck). The preceding species are not listed by frequency. Deer remains, however, were by far the most abundant on the site.

Dr. D. E. McAllister of the Zoology Division of the National Museum of Canada identified the following fish species which are not listed in order of frequency: *Acipenser fulvescens* (lake sturgeon); *Amia calva* (bowfin); *Cristivomer namaycush* (lake charr); *Esox lucius* (northern pike); *Catostomus catostomus* or *commersonii* (sucker); *Semotilus atromaculatus* (creek chub); *Ictalurus nebulosus* (brown bullhead); *Roccus chrysops* (white bass); *Micropterus dolomieu* (smallmouth bass); *Stizostedion vitreum* (walleye); and *Aplodinotus grunniens* (freshwater drum).

Mr. F. R. Cook of the Zoology Division of the National Museum of Canada tentatively identified the following reptile species: *Chrysemys picta* (painted turtle); *Chelydra serpentina* (snapping turtle); and *Clemmys insculpta* (wood turtle).

Dr. A. H. Clarke, Jr., of the Zoology Division of the National Museum of Canada identified the following freshwater mussels and land snails: *Lampisilis ovata ventricosa*; *Elliptio dilatatus*; *Triodopsis albolabris*; *Anguispira alternata*; and *Mesomphix cupreus*.

The bird and amphibian remains have not been identified.

SHELL

Only three shell artifacts were found on the Bennett site and two of these are illustrated on Plate XVII, figs. z and aa. Fig. z shows very strong evidence of grinding along one edge, whereas fig. aa has both edge-grinding at one end that forms an oblique angle and grinding on the face that eventually wore through the shell. The remaining specimen is a flat shell fragment, ground around the edges, and, although irregular in shape, is somewhat disc-like in form. The major dimensions of the latter specimen are 19 mm and 20 mm, and the thickness is 2 mm.

MISCELLANEOUS

Native Copper

The single native copper artifact is a flattened strip folded around itself to produce a bead (Plate XVII, fig. bb, right).

Vegetable Remains

The corn kernels recovered from the site were sent for examination to Dr. H. C. Cutler of the Missouri Botanical Gardens, St. Louis, Missouri. The report states that all 17 kernels are assignable to the Northern Flint race and that the kernels came from 8-rowed cobs (Cutler and Blake, n.d.).

In addition to the corn there is the evidence of fabric impressions found on ceramics. These impressions appear to relate to a twined fabric.

TABLE 15—*Occurrence of all artifact classes and their respective categories at the Bennett site*

Class	Category	<i>f</i>	%	$\frac{f}{\%}$
Ceramics	Analysable rim sherds.....	372	4.65	7,384 (92.4)
	Destroyed rim sherds (partly analysable).....	390	4.88	
	Neck sherds.....	1,440	18.02	
	Body sherds.....	4,905	61.37	
	Juvenile ceramics.....	152	1.90	
	Ceramic wastage.....	32	.40	
	Gaming discs.....	22	.28	
	Pipes.....	71	.89	
Stone	Scrapers.....	140	1.80	463 (5.8)
	Wedges.....	82	1.03	
	Projectile points.....	29	.36	
	Biface blades.....	16	.20	
	Drills.....	2	.03	
	Abraders.....	103	1.29	
	Celts.....	31	.39	
	Anvil stones.....	17	.21	
	Hammerstones.....	13	.16	
	Manos.....	13	.16	
	Paintstones.....	9	.11	
	Crinoid stem beads.....	4	.05	
	Metate.....	1	.01	
	Polished slate object.....	1	.01	
	Steatite bead.....	1	.01	
	Steatite pipe bowl fragment.....	1	.01	
Bone	Awls.....	66	.83	142 (1.8)
	Worked deer toe bones.....	26	.33	
	Beads.....	7	.09	
	Beaver incisor chisels or knives.....	6	.08	
	Worked antler tines.....	5	.06	
	Projectile points.....	3	.04	
	Antler handles.....	2	.03	
	Antler flakers (?).....	2	.03	
	Chisel.....	1	.01	
	Bracelet.....	1	.01	
	Decorated bone.....	1	.01	
	Worked rib.....	1	.01	
	Drill.....	1	.01	
	Chisel or spatula.....	1	.01	
	Drilled antler.....	1	.01	
	Miscellaneous.....	18	.23	
Shell	Grinding on edge of valve.....	2	.03	3 (.04)
	Crude disc.....	1	.01	
Copper	Bead.....	1	.01	1 (.01)
Totals.....		7,993	100.06	7,993 (100.05)

CHAPTER THREE

Comparisons

In an earlier publication (Wright 1966) I have proposed that the conquest of a population in southwestern Southern Ontario (Glen Meyer branch) by a population from southeastern Southern Ontario (Pickering branch) was one of the major forces in creating a common cultural base from which the historic Huron, Petun, Neutral, and Erie were eventually to evolve. This inferred conquest, which resulted in the dispersal and partial absorption of the Glen Meyer branch by the beginning of the 14th century, was based on both site distribution and artifact data.

Site distributions indicate that the large Glen Meyer village sites disappeared and were replaced by villages of the Uren substage, an assemblage derived from the late Pickering branch. On Figure 7, five Glen Meyer branch

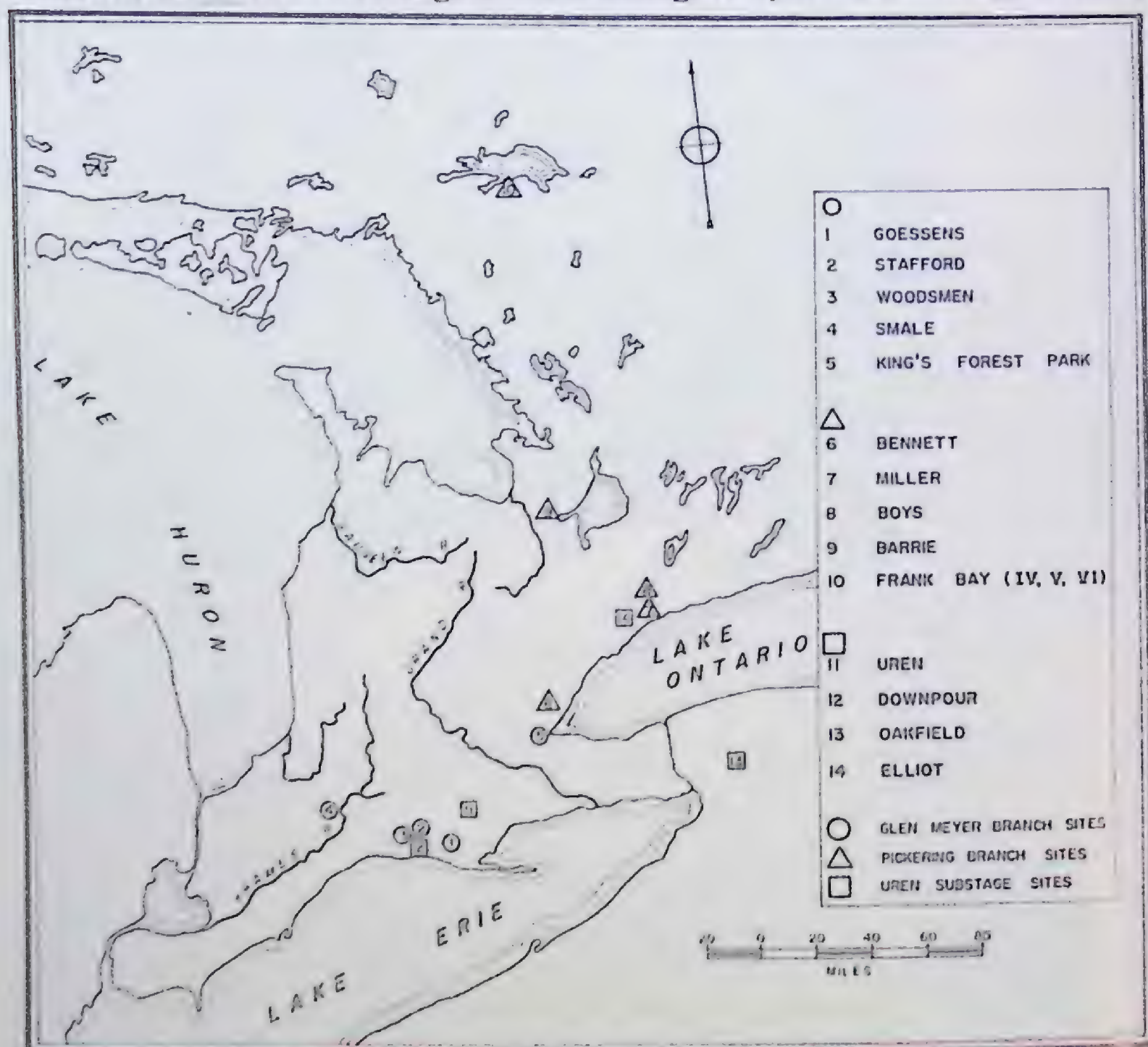


FIGURE 7—Location of fourteen Glen Meyer branch, Pickering branch, and Uren substage sites

sites, five Pickering branch sites, and four Uren substage sites are plotted to illustrate the spatial gap between the Glen Meyer and Pickering branches and the general overall distribution of the Uren substage. All these sites, with the exception of the King's Forest Park site (Donaldson 1965a), have been examined in varying detail in an earlier report (Wright 1966). Other pertinent references are as follows: Goessens/Stafford/Woodsmen/Smale (Lee 1951, 1952; appendix to Ridley 1958); Miller (Kenyon 1959, 1960); Boys/Barrie (Ridley 1958); Frank Bay (Ridley 1954); Uren (Wintemberg 1928; MacNeish 1952); Downpour (Lee 1951); Oakfield (White 1961); and Elliot (Donaldson 1962, 1965b).

The direct evidence for the partial assimilation of the Glen Meyer branch by the Pickering branch, however, cannot be demonstrated by the spatial displacement of the former group and must be sought in the artifacts of the Uren substage, which, hypothetically, represents the end product of the conquest. Since the major goals of the *Ontario Iroquois Tradition* (Wright 1966) were to describe the Glen Meyer branch and to attempt a general synthesis of the events that led to the historic Huron, Petun, Neutral, and Erie, it was not within the scope of the study to describe in detail the evidence for Pickering branch assimilation of the Glen Meyer branch. Instead, certain general Glen Meyer branch ceramic and lithic trait survivals into the Uren substage were used, in conjunction with the site distribution data, as evidence for a conquest with some subsequent absorption of the conquered population. The major purpose of this comparative chapter will be to demonstrate, through attribute studies, that the conquest suggested by the Uren substage replacement of the Glen Meyer branch also involved the adoption of a sufficient number of the conquered, probably women and children, to ensure the perpetuation of a substantial number of Glen Meyer branch traits within the culture of the conquerors. To demonstrate with archaeological data such an event as cultural absorption it is necessary to have not only large bodies of data but also comparative components representing the Pickering branch, the Glen Meyer branch, and the group resulting from the conquest (Uren substage). Fortunately, all these prerequisites are met by the available data.

The Bennett site represents an excellent example of what the conquerors of the Glen Meyer branch looked like just prior to the actual inferred conquest. Indeed, sites such as Bennett had already encroached upon Glen Meyer branch hunting and fishing territory, as indicated by the proximity of the former site to the Glen Meyer seasonal camp-site of King's Forest Park (Donaldson 1965a). The temporal position of the Bennett site is well established by two radiocarbon dates of A.D. 1260 $\pm$ 60 (GSC-143) and A.D. 1280 $\pm$ 100 (M-1527) and a seriation estimate of A.D. 1250.

The Goessens site (Wright 1966) is used as an example of the Glen Meyer branch, because it provides the largest single body of pertinent data. Most of the data from the Goessens site were presented in sufficient detail to be directly incorporated into the present study. Some reanalysis, however, was necessary. A seriation estimate of the age of the site is approximately A.D. 1200.

The final component to be used for comparative purposes is the Uren site (Wintemberg 1928), which represents an excellent example of the end

product of the inferred conquest. In order to incorporate much of the Uren site data into the present study it was necessary to carry out a fairly extensive reanalysis. A seriation estimate of the age of the Uren site is A.D. 1300.

Under the system proposed for the Ontario Iroquois Tradition, the Bennett and Goessens sites would fall within the Early Ontario Iroquois stage, and the Uren site would be assigned to the Middle Ontario Iroquois stage, which was instituted, in part, by the inferred conquest. If the hypothesis suggesting that sites such as Bennett conquered sites such as Goessens to result in sites such as Uren is correct, then the relationships between the Bennett, Goessens, and Uren sites should reflect the inferred events and therefore document the proposed conquest and subsequent assimilation. The Bennett and Goessens sites should be most dissimilar, the Bennett and Uren sites should be most similar, and the Uren and Goessens sites should be intermediate to the preceding relationships. This sequence of relationships stems from the evidence that Bennett and Goessens are the products of different developments, whereas Bennett and Uren are chronologically representatives of a single development. Uren and Goessens, however, will reflect a higher degree of relationship than Bennett and Goessens because of Glen Meyer branch survivals in the Uren site, which are the direct result of conquest and assimilation.

To test the proposed inferred relationships, thirteen tables were compiled relating, for the most part, the attributes and attribute clusters of the three sites. Sequentially, the tables compare the following: exterior rim sherd decorative technique; exterior rim sherd motif; technique and motif attributes of the interior rim, technique and motif attributes of the rim lip; the punctate and/or boss attributes; castellations; body sherd surface treatment; neck sherd surface treatment; stone tool classes; scraper varieties; projectile point varieties; bone tool classes; and miscellaneous traits. At the bottom of each table, the significance of the relationships between the sites is briefly considered as well as the discrepancies in the frequencies recorded for specific sites in other publications.

TABLE 16—*Rim sherd decorative techniques*

Technique	Bennett		Goessens		Uren	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Push-pull.....	205	55.1	—		143	29.7
Linear stamp.....	66	17.7	240	48.6	161	33.5
Incised.....	35	9.4	19	3.9	80	16.6
Combined techniques.....	27	7.3	24	4.9	29	6.0
Punctate.....	19	5.1	13	2.6	20	4.2
Dentate stamp.....	11	3.0	3	.6	6	1.3
Dragged stamp.....	5	1.3	—		10	2.1
Plain.....	3	0.8	43	8.7	25	5.2
Cord-wrapped stick.....	—		107	21.7	6	1.3
Crescent stamp.....	—		29	5.9	1	.2
Cord malleated.....	1	0.3	16	3.2	—	
Totals.....	372	100.0	494	100.1	481	100.1

In the original rim sherd analysis of the Goessens site, there were 533 specimens (Wright 1966; tables 1, 137). The missing 39 sherds are now in loan collections or on exhibition. Since the missing sherds were selected as representative specimens, their absence from the present table is not regarded as a disruptive factor. A previous rim sherd analysis of the Uren site lists 1,078 specimens (MacNeish 1952; Figures 6, 12), although the actual count from Figure 6 in MacNeish's report is 1,087. The marked reduction of rim sherds in the above table is the product of a number of factors. Certainly the major factor is the definition of an analysable rim sherd as applied in this report. The limitation of requiring the entire exterior motif to qualify as an analysable rim sherd also reduces the sample for the Bennett site from 543 (Wright 1966; tables 14, 146) to 372. Further, the attempt to analyse vessels rather than rim sherds results in obvious multiple sherds from a single vessel being omitted from the analysis, and certainly reduces the sherd count. The preceding statements on rim sherd samples will also apply to tables 17 to 21.

The attribute of decorative technique appears to be a good indicator of the relationships between the three sites. Of the eleven techniques recognized (including combined techniques as a single technique), the cord-wrapped stick and the crescent stamp are absent from the Pickering branch site (Bennett), whereas the push-pull and dragged stamp are absent from the Glen Meyer branch site (Goessens). All four of these techniques are represented at the Uren substage site (Uren). Indeed, the Uren site possesses all the decorative techniques recorded for the Bennett and Goessens sites with the single exception of the cord malleated technique, a minority technique present at both the earlier sites. Qualitatively and quantitatively the Uren site decorative techniques support the hypothesis that the site represents a direct development out of the Pickering branch with a significant addition of Glen Meyer branch traits.

TABLE 17—*Rim sherd motifs*

Motif	Bennett		Goessens		Uren	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Horizontals (including single lines).....	167	44.9	30	6.1	164	34.1
Obliques or verticals above and /or below horizontals.....	79	21.2	10	2.0	87	18.1
Chevron.....	33	8.9	100	20.2	31	6.4
Horizontals above chevron, obliques, criss-cross, or punctates.....	27	7.3	—	—	7	1.5
Bands of obliques and/or verticals.....	24	6.4	168	34.0	101	21.0
Obliques or verticals above horizontals above chevron or obliques.....	16	4.3	—	—	—	—
Obliques or verticals.....	13	3.5	29	5.9	29	6.0
Plain.....	4	1.1	59	11.9	25	5.2
Horizontals above obliques or punctates above horizontals.....	2	.5	—	—	—	—
Miscellaneous.....	7	1.9	4	0.8	8	1.7
Obliques above or below criss-cross.....	—	—	32	6.5	1	0.2

TABLE 17—*Concluded*

Motif	Bennett		Goessens		Uren	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Bands of criss-cross.....	—		25	5.1	—	
One or more rows of criss-cross above horizontals.....	—		7	1.4	—	
Chevron above horizontals.....	—		10	2.0	—	
Criss-cross above chevron.....	—		6	1.2	1	0.2
Random.....	—		6	1.2	—	
Criss-cross above obliques above horizontals.....	—		5	1.0	—	
Punctates above or below criss-cross.....	—		3	0.6	—	
Horizontals above bands of verticals or obliques.....	—		—		5	1.0
Criss-cross above horizontals.....	—		—		2	0.4
Criss-cross above horizontals above obliques.....	—		—		2	0.4
Punctates above or below horizontals.....	—		—		5	1.0
Criss-cross.....	—		—		6	1.3
Obliques above punctates.....	—		—		3	0.6
Criss-cross above bands of obliques.....	—		—		2	0.4
Criss-cross above horizontals above obliques above horizontals.....	—		—		2	0.4
Totals.....	372	100.0	494	99.9	481	99.9

TABLE 18—*Technique and motif attributes of the interior rim*

Technique and Motif	Bennett		Goessens		Uren	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Plain.....	247	66.4	200	40.5	253	52.6
Oblique or vertical linear stamp.....	76	20.4	122	24.7	145	30.2
Criss-cross linear stamp.....	22	5.9	41	8.3	27	5.6
Oblique or vertical dentate stamp.....	4	1.1	2	.4	1	0.2
Oblique dragged stamp.....	5	1.3	—		1	0.2
Chevron linear stamp.....	3	0.8	7	1.4	5	1.0
Horizontal push-pull.....	2	0.5	—		8	1.7
Criss-cross dentate stamp.....	2	0.5	—		—	
Oblique fingernail.....	1	0.3	—		—	
Criss-cross linear stamp above obliques....	1	0.3	—		—	
Criss-cross incised.....	1	0.3	—		—	
Destroyed.....	8	2.2	7	1.4	13	2.7
Oblique or vertical cord-wrapped stick.....	—		88	17.8	5	1.0
Crescent stamp.....	—		23	4.7	—	
Punctates.....	—		3	.6	9	1.9
Criss-cross cord-wrapped stick.....	—		1	.2	—	
Horizontal dragged stamp.....	—		—		3	0.6
Oblique linear stamp above punctates.....	—		—		3	0.6
Horizontal push-pull above punctates.....	—		—		2	0.4

TABLE 18—*Concluded*

Technique and Motif	Bennett		Goessens		Uren	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Oblique linear stamp above criss-cross linear stamp.....	—		—		2	0.4
Incised horizontals.....	—		—		1	0.2
Zig-zag dentate stamp.....	—		—		1	0.2
Oblique linear stamp above horizontal push-pull.....	—		—		1	0.2
Punctates above horizontal push-pull.....	—		—		1	0.2
Totals.....	372	100.0	494	100.0	481	99.9

Of the 26 motifs (including a miscellaneous category) the Uren site possesses all but eight whereas the Glen Meyer branch site (Goessens) and the Pickering branch site (Bennett) are lacking in 11 and 16, respectively. Further, the frequencies of two of the dominant motifs (horizontals, and bands of obliques and/or verticals) support the proposal that the Uren site is a development out of the Pickering branch with the addition of some Glen Meyer branch traits. In both incidences the Uren site frequencies are intermediate to the Bennett site and Goessens site frequencies.

The miscellaneous category on Table 17 includes all the single and unique motifs.

The qualitative and quantitative data on Tables 18 and 19 again support the proposal that the Uren site evolved directly from sites such as the Bennett site but with subsequent Glen Meyer branch (Goessens) accretions.

The destroyed category on both tables refers to specimens in which the attributes under consideration were not observable on what were otherwise analysable rim sherds.

TABLE 19—*Technique and motif attributes of the lip*

Technique and Motif	Bennett		Goessens		Uren	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Plain.....	129	34.7	246	49.8	221	46.0
Oblique or vertical linear stamp.....	87	23.4	96	19.4	55	11.4
Encircling push-pull.....	55	14.8	—		57	11.9
Notched interior lip edge.....	23	6.2	—		21	4.4
Encircling punctate.....	21	5.6	23	4.7	20	4.2
Encircling incised.....	10	2.7	8	1.6	30	6.2

TABLE 19—*Concluded*

Technique and Motif	Bennett		Goessens		Uren	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Oblique or vertical dentate stamp.....	11	3.0	—		1	0.2
Oblique linear stamp and encircling push-pull.....	4	1.1	—		—	
Interior lip edge notching and encircling push-pull.....	4	1.1	—		5	1.0
Interior lip edge notching and encircling incised.....	3	0.8	—		9	1.9
Oblique linear stamp and encircling incised	3	0.8	4	0.8	3	0.6
Destroyed.....	3	0.8	3	0.6	—	
Cord malleated.....	2	0.5	5	1.0	1	0.2
Interior lip edge notching and oblique or vertical linear stamp.....	2	0.5	—		3	0.6
Notched exterior and interior lip edge.....	2	0.5	—		14	2.9
Encircling dentate stamp.....	2	0.5	—			
Dragged stamp.....	6	1.6	—		1	0.2
Encircling fingernail impressed.....	1	.3	—			
Notched exterior lip edge.....	1	.3	—		16	3.3
Exterior and interior lip edge notching and encircling push-pull.....	1	.3	—			
Oblique linear stamp and two encircling rows of push-pull.....	1	.3	—			
Exterior lip edge notching and encircling push-pull.....	1	.3	—			
Oblique or vertical cord-wrapped stick.....	—		56	11.3	6	1.3
Crescent stamp.....	—		27	5.5		
Criss-cross linear stamp.....	—		11	2.2	1	0.2
Encircling cord-wrapped stick.....	—		11	2.2		
Vertical cord-wrapped stick and encircling cord-wrapped stick.....	—		3	0.6		
Chevron linear stamp.....	—		1	0.2		
Double row of encircling push-pull.....	—		—		1	0.2
Criss-cross linear stamp on interior lip edge.....	—		—		1	0.2
Exterior lip edge notching and encircling incised.....	—		—		4	0.8
Exterior lip edge notching and encircling punctate.....	—		—		2	0.4
Exterior and interior lip edge notching and vertical linear stamp.....	—		—		1	0.2
Encircling linear stamp.....	—		—		2	0.4
Exterior lip edge notching and oblique or vertical linear stamp.....	—		—		5	1.0
Interior lip edge notching and encircling punctate.....	—		—		1	0.2
Totals.....	372	100.1	494	99.9	481	99.9

TABLE 20—*Punctating attributes*

Attributes	Bennett		Goessens		Uren	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Exterior boss.....	92	24.7	125	25.3	45	9.4
Interior boss.....	—	—	11	2.2	—	—
Punctate segregated exterior boss.....	38	10.2	—	—	7	1.5
Exterior punctate (no boss).....	—	—	5	1.0	—	—
Interior punctate (no boss).....	69	18.6	49	9.9	42	8.7
Absent.....	173	46.5	304	61.5	387	80.5
Totals.....	372	100.0	494	99.9	481	100.1

As will be illustrated at the end of this chapter, out of thirteen tables, table 20 was the only one that deviated sharply from the hypothesized relationships between the three sites. To reiterate, these relationships are as follows: Bennett and Goessens are least alike; Bennett and Uren are most alike; and Uren is more similar to Goessens than Goessens is to Bennett. The disrupting factor, relative to the hypothesis, that resulted in a reversal of the expected relationships is the time factor. Both Goessens and Bennett are earlier than Uren, and within both the Glen Meyer branch and the Pickering branch bossing steadily decreases in frequency through time. The relative contemporaneity of the Bennett and Goessens sites and a similar attribute trend, therefore, resulted in a close relationship between the two sites.

TABLE 21—*Castellations*

Variety	Bennett		Goessens		Uren	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Unbroken.....	25	6.7	28	5.7	51	10.6
Vertical.....	9	2.4	—	—	—	—
Chevron and punctates.....	9	2.4	—	—	2	0.4
Punctates.....	5	1.3	2	0.4	2	0.4
Chevron.....	3	0.8	—	—	3	0.6
Chevron, punctates, and arms.....	2	0.5	—	—	—	—
Broken.....	2	0.5	—	—	11	2.3
Chevron and bar or bars.....	1	0.3	—	—	5	1.0
Chevron and verticals.....	1	0.3	—	—	—	—
Absent.....	315	84.7	464	93.9	407	84.6
Totals.....	372	99.9	494	100.0	481	99.9

Castellation varieties are illustrated on Figure 6. The Uren site castellations clearly reflect their Bennett site antecedents.

TABLE 22—*Body sherd surface treatment techniques*

Technique	Bennett		Goessens		Uren	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Plain.....	2,547	51.9	189	10.0	797	26.5
Ribbed paddle.....	1,842	37.6	5	0.3	1,571	52.2
Check stamp.....	221	4.5	—	—	351	11.7
Smoothed-over cord.....	220	4.5	681	38.0	187	6.2
Scarified.....	52	1.1	518	29.0	43	1.4
Cord malleated.....	17	0.3	129	7.0	5	0.2
Fabric impressed.....	6	0.1	244	14.0	10	0.3
Scarified over cord.....	—	—	41	2.0	1	P
Ribbed paddle over cord.....	—	—	—	—	35	1.2
Check stamp over cord.....	—	—	—	—	3	0.1
Scarified over ribbed paddle.....	—	—	—	—	2	0.1
Ribbed paddle and check stamp....	—	—	—	—	2	0.1
Totals.....	4,905	100.0	1,807	100.3	3,007	100.0

The marked difference in frequencies of the various body sherd surface treatment techniques at the Goessens site and at the Bennett and Uren sites has resulted in a high degree of similarity between only the Bennett and Uren sites. The predominance of the smoothed-over cord and scarified techniques at the Goessens site stands in contrast to a similar predominance of the ribbed paddle technique at the Bennett and Uren sites. Sherd thicknesses are very similar, and the ranges and means for the Bennett, Goessens, and Uren sites are as follows: 3 to 19 mm (7.2 mm), 3 to 16 mm (7.1 mm), and 3 to 15 mm (7.4 mm), respectively. The Bennett and Goessens sites measurements were based on total samples, and the Uren site measurements were obtained from a sample of 482 sherds. At the Uren site 17 ribbed paddle sherds and one check stamp sherd possess a red ochre wash on the exterior.

TABLE 23—*Neck sherd surface treatment techniques*

Technique	Bennett		Goessens		Uren	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Plain.....	1,251	86.9	393	42.0	650	67.8
Ribbed paddle.....	97	6.7	—	—	242	25.2
Smoothed-over cord.....	38	2.6	130	14.0	20	2.1
Decorated.....	33	2.3	335	36.0	32	3.3
Scarified.....	13	0.9	75	8.0	5	0.5
Check stamp.....	5	0.4	—	—	9	1.0
Painted.....	3	0.2	1	0.1	—	—
Cord malleated.....	—	—	4	0.4	—	—
Fabric impressed.....	—	—	3	0.3	—	—
Ribbed paddle over cord.....	—	—	—	—	1	0.1
Totals.....	1,440	100.0	941	100.8	959	100.0

With reference to the neck sherd surface treatment techniques, it can be seen that the Bennett and Uren sites possess a fairly close relationship, whereas the Goessens site is about equally similar to the Bennett and Uren sites.

Since the shoulder of the vessel represents the demarcation point between the neck and the body, it is considered here under the neck sherd category. Of the Bennett site neck sherds, 1,295 (89.9) did not possess a recognizable shoulder, but 123 (8.5) specimens had an incipient shoulder, and 22 (1.5) specimens had a clearly carinated shoulder. At the Uren site, 842 (87.8) neck sherds lacked a shoulder, whereas 98 (10.2) specimens had an incipient shoulder, and 19 (2.0) specimens possessed carinated shoulders. Equivalent data are not available for the Goessens site, but for the Glen Meyer branch as a whole . . . “Relatively few sherds possessing a clear point of demarcation between the neck and the body (shoulder) of the vessel could be recognized. This condition is probably due to the rather incipient angle which separates these two regions of the vessel” (Wright 1966: 31–32). The evidence from the shoulder sherds suggests that from the Bennett site to the Uren site there has been a slightly increased effort to demarcate this area of the vessel.

TABLE 24—*Stone tool categories*

Category	Bennett		Goessens		Uren	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Scrapers.....	140	30.2	61	27.5	217	33.7
Wedges.....	82	17.7	4	1.8	108	16.8
Projectile points.....	29	6.3	65	29.3	89	13.8
Biface blades.....	16	3.5	20	9.0	18	2.8
Drills.....	2	0.4	7	3.2	4	0.6
Abraders.....	103	22.3	24	10.8	118	18.3
Celts.....	31	6.7	18	8.1	48	7.5
Anvil stones.....	17	3.7	6	2.7	7	1.1
Hammerstones.....	13	2.8	5	2.3	11	1.7
Manos.....	13	2.8	—		1	0.2
Paintstones.....	9	1.9	—		1	0.2
Crinoid stem beads.....	4	0.9	—		—	
Metate.....	1	0.2	—		11	1.7
Polished slate object.....	1	0.2	—		—	
Steatite bead.....	1	0.2	—		—	
Steatite pipe bowl fragment.....	1	0.2	—		—	
Strike-a-lights or flint hammers.....	—		1	0.5	—	
Choppers.....	—		1	0.5	—	
Pebble pendants.....	—		8	3.6	5	0.8
Mica chunks*.....	—		2	0.9	—	
Ground stone scrapers.....	—		—		3	0.5
Pestle.....	—		—		1	0.2
Pipe blank.....	—		—		1	0.2
Two-hole gorget.....	—		—		1	0.2
Totals.....	463	100.0	222	100.2	644	100.3

* These two chunks of vermiculite (mica division) were erroneously identified by me as iron pyrites (Wright 1966: 37).

A number of interesting frequency differences in stone tool categories appear on Table 24. Particularly significant is the low frequency of wedges at the Goessens site. The only apparent characteristic Glen Meyer branch stone tool category to carry over to the Uren site is the pebble pendants.

TABLE 25—*Scraper varieties*

Variety	Bennett		Goessens		Uren	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Standard side scraper.....	46	32.9	19	31.2	78	35.9
Triangular side scraper.....	15	10.7	7	11.5	20	9.2
Random scraper.....	31	22.1	8	13.1	39	18.0
Simple end scraper.....	24	17.1	1	1.6	40	18.4
Blade end scraper.....	3	2.1	3	4.9	1	0.5
Glen Meyer end scraper.....	2	1.4	15	24.6	16	7.4
Side-notched end scraper.....	1	0.7	1	1.6	1	0.5
Spokeshave.....	6	4.3	7	11.5	21	9.7
Saws.....	2	1.4	—	—	—	—
Circular scraper.....	1	0.7	—	—	—	—
Fragments.....	9	6.4	—	—	—	—
Stemmed side scraper.....	—	—	—	—	1	0.5
Totals.....	140	99.8	61	100.0	217	100.1

The majority of the scraper varieties compare quite closely. Major discontinuities, however, appear in the frequencies of some of the end scraper varieties. Simple end scrapers are well represented at the Bennett and Uren sites and scarce at the Goessens site. The Glen Meyer end scraper (Wright 1966: 34–35), which was earlier regarded as one of the diagnostic stone tools of the Glen Meyer branch, can still be seen as a far more characteristic scraper variety of the Glen Meyer branch than it is of the Pickering branch. The frequency of the Glen Meyer end scraper may be indicative of Glen Meyer branch influences on the Uren site stone assemblage.

To compare the Goessens site scrapers with scraper varieties used in this report it was necessary to reanalyse the specimens incorporated in an earlier classification of the Goessens site scrapers (Wright 1966: 145, Table 11). Under the earlier classification the variety 'random flake scraper' included the standard and triangular side scrapers and the random scrapers of this study. Three spokeshaves from the earlier classification are now assigned to the side scraper varieties. Finally, two artifacts called 'specialized tools' (Wright 1966: 36) are also placed within the side scraper varieties.

Triangular projectile points were dominant at all three sites, whereas the next major variety, the side-notched triangular point, was completely absent from the Goessens site. The presence of minor varieties at the Goessens and Uren sites consisting of lanceolate and stemmed forms may represent carry-overs from the Glen Meyer branch into the Uren substage.

TABLE 26—*Projectile point varieties*

Variety	Bennett		Goessens		Uren	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Triangular.....	12	70.6	40	83.3	48	75.0
Side-notched triangular.....	5	29.4	—		11	17.2
Lanceolate.....	—		1	2.1	3	4.7
Stemmed.....	—		3	6.3	1	1.6
Corner-notched.....	—		4	8.3	—	
Ovate acuminate.....	—		—		1	1.6
Totals.....	17	100.0	48	100.0	64	100.1

TABLE 27—*Bone tool categories*

Category	Bennett		Goessens		Uren	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Awls.....	66	46.5	19	70.4	126	58.1
Worked deer toe bones.....	26	18.3	—		29	13.4
Beads.....	7	4.9	1	3.7	21	9.7
Beaver incisor chisels or knives.....	6	4.2	—		3	1.4
Worked antler tines.....	5	3.5	—		3	1.4
Projectile points.....	3	2.1	1	3.7	5	2.3
Antler handles.....	2	1.4	—		—	
Antler flakers.....	2	1.4	1	3.7	6	2.8
Chisel.....	1	0.7	—		—	
Bracelet.....	1	0.7	—		1	0.5
Decorated bone.....	1	0.7	—		—	
Worked rib.....	1	0.7	1	3.7	—	
Drill.....	1	0.7	—		—	
Chisel or spatula.....	1	0.7	—		—	
Drilled antler.....	1	0.7	—		—	
Miscellaneous.....	18	12.7	3	11.1	6	2.8
Tubes.....	—		1	3.7	3	1.4
Beamers.....	—		—		4	1.8
Drilled turtle shell (rattles ?).....	—		—		3	1.4
Harpoon.....	—		—		1	0.5
Netting needle.....	—		—		1	0.5
Combs.....	—		—		2	0.9
Mink mandible pendant.....	—		—		1	0.5
Turtle plastron pendant.....	—		—		1	0.5
Whistle.....	—		—		1	0.5
Totals.....	142	99.9	27	100.0	217	100.4

Little can be said of Table 27 other than to note the relatively close relationship between the Bennett site and the Uren site and the general paucity and restricted variety of worked bone at the Goessens site relative to the other two sites.

The miscellaneous category on Table 27 refers to specimens possessing evidence of cutting and/or grinding, though too fragmented to be placed within a descriptive or functional category.

TABLE 28—*Miscellaneous traits*

Trait	Bennett		Goessens		Uren	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Gaming discs (pottery).....	22	46.8	—		5	21.7
Pipes and pipe bowl fragments.....	21	44.7	7	100.0	13	56.5
Shell with grinding on edge of valve.....	2	4.3	—		4	17.4
Shell disc.....	1	2.1	—		—	
Copper bead.....	1	2.1	—		—	
Marine shell bead.....	—		—		1	4.3
Totals.....	47	100.0	7	100.0	23	99.9

Table 28 contains the traits that have not been considered in the preceding twelve tables. The perpetuation of pottery gaming discs and, possibly, mussel valves with edge grinding from the Bennett site to the Uren site is apparent. Little can be said about the Goessens site since pipe fragments represented the only miscellaneous trait. Pipes were not compared on a separate table because of the low frequencies and the basic similarities of the specimens from all three sites.

The coefficient of similarity (Brainerd 1951) has been used to reduce to more manageable units the large bodies of data incorporated in Tables 16 to 28. The coefficient is arrived at by aligning the percentage frequencies of comparable data from two sites, subtracting the comparable units, adding the differences, and, finally, subtracting the total of the differences from 200. Theoretically, identical sites would have a coefficient of 200, and completely dissimilar sites would have a coefficient of 0. Figure 8 presents the resulting coefficients in both tabular form and graphic form. If the hypothesis of late Pickering branch conquest and partial absorption of the Glen Meyer branch is correct, then the coefficients between Bennett (preconquest Pickering branch) and Goessens (preconquest Glen Meyer branch) should be lowest and the coefficients between Bennett and Uren (postconquest product of the Pickering branch) should be highest. The coefficient relationship of the Goessens and Uren sites, however, should be intermediate to the other site relationships because of the acquisition of Glen Meyer traits in the Uren site as a result of the inferred conquest and partial assimilation. In the thirteen compared bodies of data there was only one significant deviation from the hypothesized relationships. This one exception pertains to the

punctate-boss attributes (Table 20) and was predictable since bossing and the associated or vestigial punctating attributes decrease in frequencies through time in both the Pickering branch and the Glen Meyer branch. As a result, the earlier Bennett and Goessens sites bear a higher relationship to each other with reference to these attributes than either site does to the later Uren site. With the single exception just discussed it is clear from Figure 8 that the Goessens/Uren relationship is intermediate to the other two relationships. This coefficient position, of course, is only a simplified expression of the data presented in Tables 16 to 28. It is these data, taken in conjunction with the site distributions of the Glen Meyer branch, Pickering branch, and Uren substage (Figure 7) that are regarded as the substantiating evidence for the proposal of a Pickering branch conquest of the Glen Meyer branch with some subsequent assimilation of the conquered population. The conquest brought to an end the Early Ontario Iroquois stage and initiated the Middle Ontario Iroquois stage with its first substage, Uren. The Uren substage, however, was the product of both the continuing cultural development of the Pickering branch in southeastern Southern Ontario and the Pickering branch conquest of the Glen Meyer branch. To separate late Pickering branch sites from Uren substage sites it has been proposed that all components producing less than 10 per cent bossed pottery be assigned to the Uren substage. The interpretational necessity for such an artificial device has been discussed in an earlier publication (Wright 1966: 40-41, 54-55). It now appears that the 10 per cent cut-off point for the Uren substage was too low. The reanalysis of the Uren site rim sherds indicated that 10.9 per cent of the rims possessed bosses (Table 20), as opposed to the earlier figure of 7 per cent (MacNeish 1952: 12, figure 6).

The relative quantity of obvious Glen Meyer branch additions to the Uren substage in southwestern Southern Ontario and New York is small, and it can only be assumed that a substantial percentage of the obviously large population represented by the Glen Meyer branch was either destroyed or dispersed. Both archaeology and, by extrapolation, ethnohistory suggest that dispersal was a far more likely fate than total destruction, and there is some evidence in support of the contention that a portion of the Glen Meyer branch population successfully fled to southeastern Michigan. The Younger Tradition of southeastern Michigan (Fitting 1965, 1966) appears, in large part, to have paralleled the development of the Ontario Iroquois Tradition. Indeed, there is considerable evidence that the Younger Tradition and the Glen Meyer branch of the Early Ontario Iroquois stage are distantly related and that both populations stemmed from a relatively common Middle Woodland base. During the Springwells phase of the Younger Tradition, which has been dated between A.D. 1100 and A.D. 1250 (Fitting 1966), there was a sudden increase in the Springwells Net Impressed pottery type (Fitting 1965: 138, figure 18). The decorative technique of this pottery type is equatable with the technique found in the Stafford Stamped pottery type of the Glen Meyer branch (Wright 1966: 118-119), although this relationship was originally obscured by the differing interpretations of technique by the respective researchers. Within the Glen Meyer branch the Stafford

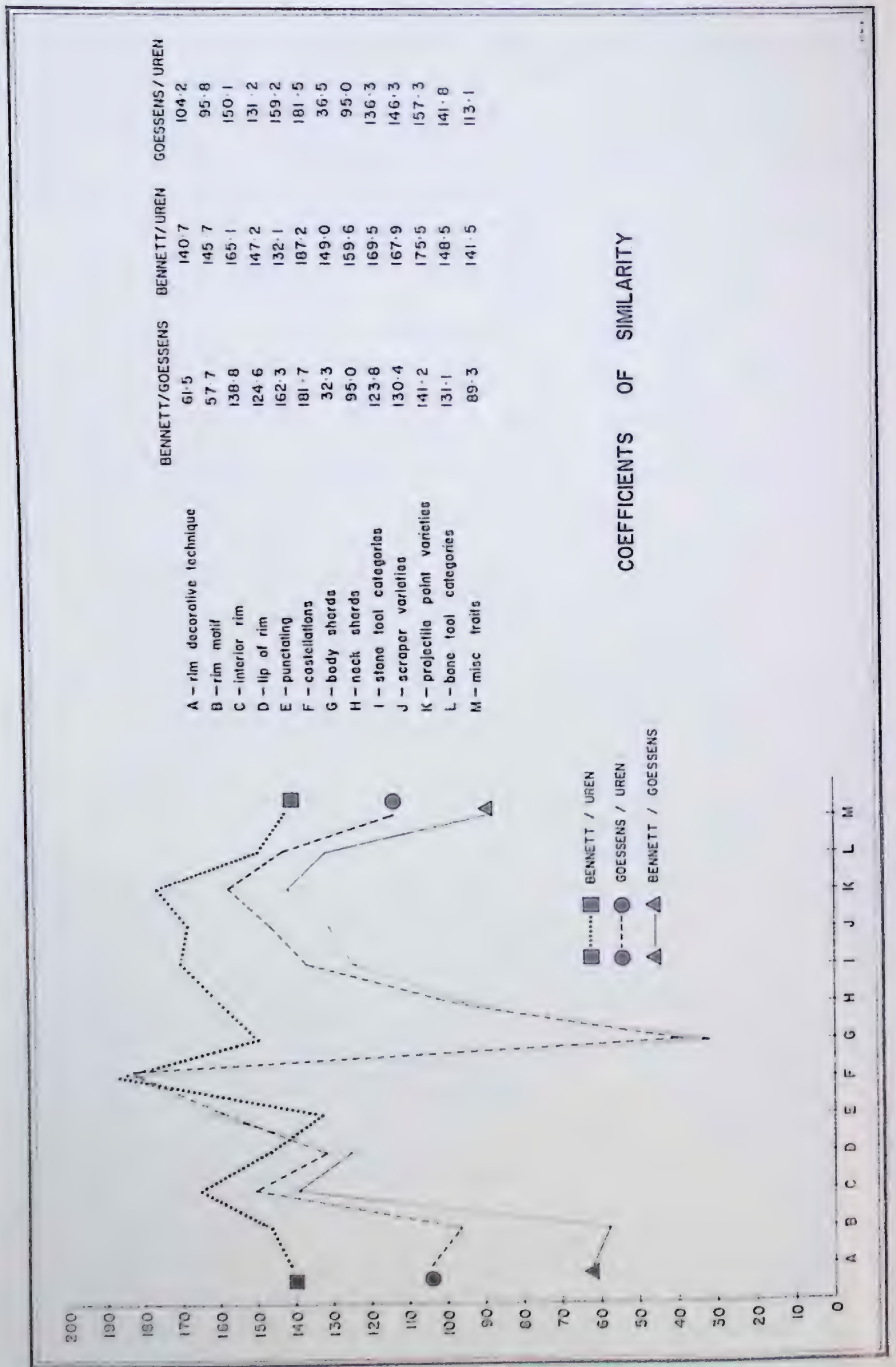


FIGURE 8—Tabular and graphic presentation of the coefficients of similarity

Stamped pottery type is most prevalent during the late portion of the development, and the marked increase of the technique in the Springwells phase of the Younger Tradition may reflect the sudden presence of Glen Meyer branch refugees in the Younger Tradition. Only one of the four remaining major pottery types in the Springwells phase does not possess an approximately equatable pottery type in the Glen Meyer branch. These Younger Tradition pottery type and Glen Meyer branch pottery type equivalents are, respectively, Vase Dentate—Stafford Dentate, Vase Tool-Impressed—Ontario Oblique, and Vase Corded—Glen Meyer Oblique and their frequencies trends in the Younger Tradition are not markedly modified during the Springwells phase and, as such, do not particularly support the premise that at this time a large refugee population had entered southeastern Michigan from Ontario. Further, the statement that “There were too few sherds with bosses to test for associations. . . .” (Fitting 1965: 14) in the Younger Tradition is in opposition to arguments supporting an ingress of a Glen Meyer branch population to southeastern Michigan, since even on the late Glen Meyer branch site of Smale, 15 per cent of the pottery was bossed (Wright 1966: 28). Although the time element and certain specific ceramic data offer a tentative basis for the hypothesis that a portion of the Glen Meyer branch population successfully fled to Michigan and was incorporated into the Younger Tradition, the supporting data are at present far too limited to demonstrate such an event.

SUMMARY

The Bennett site is a 2.5 to 3 acre palisaded village which was occupied during the mid-13th century. Within the confines of the double palisade occurred longhouses, burials, pits, and other features.

Of the seven proposed house structures only three are clearly demonstrable. House structure 1, which was the only definite house completely exposed, appears, in most respects, to be typical of the houses at the site. It measured 55 feet by 22.5 feet and was rectanguloid in outline with both extremities rounded. The original house length, however, was 40 feet, and a 15-foot extension had been added. A definite doorway occurred at one end of the house. Two lines of large interior posts paralleled both house walls at a distance of approximately 4 feet 8 inches and probably represent interior and sleeping platform supports. A line of small exterior posts extended from a corner of the house and paralleled the wall for 37.5 feet. It is inferred that this feature may represent the remains of a structure, perhaps a woodshed, attached to the side of the house. A single central hearth was present, and of the 35 pits in the house, 11 definitely clustered to one side of the hearth. An unusual feature of house structure 1 was the presence of eight separate burials within its confines. With the general exception of being shorter, the Bennett site houses clearly foreshadow later Iroquois longhouses.

The thirteen burials were represented by flexed, bundle, and dismembered varieties of interment. The two last-mentioned burial techniques both anticipate the later ossuary burial pattern of Ontario Iroquois society as does

the absence of grave goods and the occurrence of supernumerary bones in graves. In addition to the human burials there was a single dismembered and disarticulated dog burial.

Of the 243 pits encountered, 85 per cent did not exceed 30 inches in diameter or maximum dimension. The majority of the small pits were circular with a shallow basin profile, and they contained very little refuse. As a general rule the larger pits were much richer in refuse, and two of these pits contained burials. Eighty-five per cent of the small pits were associated with house structures.

The double palisade followed approximately the 24-foot contour of the site and for its exposed length ran fairly straight except where it faced the most gentle slope leading up to the hillock upon which the site is located. At this particular point the palisade formed at least two angles which may have served a similar function to bastions. Also at this potentially weak point in the defences, a number of stones weighing two pounds or less that may have been discarded missiles were found outside the palisade. On another portion of the site there was some evidence that on occasion the palisade and house structures had been connected as a further defensive measure.

Minor features encountered were as follows: pot concentrations consisting of clay vessels which appear to have been purposefully incorporated into small pits; hearth floors represented by fire-reddened sand areas, which, with one isolated exception, were always located in house structures; and a single cache of unfinished celts.

The Bennett site inhabitants subsisted on Northern Flint corn, a wide range of animals, and, by inference, wild plant matter. Of the animals exploited the Virginia deer was by far the most important. Indeed, in several instances, relatively complete deer skulls were found placed in pits in a manner that suggested ritual treatment. Dog was also eaten as was a wide range of fish.

The preceding examination of the Bennett site reveals that all the essential elements of Iroquois society are already present. Even the archaeological material culture is typically Iroquois with ceramics representing more than 90 per cent of all the artifacts recovered.

I have proposed (Wright 1966) that the Bennett site and kindred late Pickering branch sites of the same general area shifted to the southwest and in the process of expansion dispersed and, in part, assimilated the Glen Meyer branch population of southwestern Southern Ontario. Two major sources of data are used to support the proposed late Pickering branch conquest of the Glen Meyer branch. First, there is the geographic distribution of Pickering branch sites, Glen Meyer branch sites, and Uren substage sites. Even at the time that the Bennett site was occupied it appears that the Pickering branch was already encroaching upon Glen Meyer branch foraging territory. This situation is suggested by the proximity of the Bennett village site to the Glen Meyer branch camp-site of King's Forest Park. Finally, the occurrence of Uren substage sites, such as the Downpour site, in the heart of the Glen Meyer branch homeland is evidence of the latter

group's displacement. It would appear, however, that the displacement did not result from a sudden military stroke such as the one that destroyed the historic Hurons but rather it was the result of gradual encroachment. This interpretation finds support in the reference to the Uren site that "It is one of ten sites within an area of about 20 square miles; all of the same culture and all of which may have been occupied contemporaneously" (Wintenberg 1928:1). Such a close relationship of the villages of an aggressor would possess both defensive and offensive advantages.

The second major body of data used to demonstrate the conquest of the Glen Meyer branch by the Pickering branch is the detailed artifact comparisons of the Bennett, Goessens, and Uren sites. If the conquest and partial assimilation hypothesis is correct, then the Bennett site should be least similar to the Goessens site and most similar to the Uren site. The Uren site, however, should show a higher degree of relationship to the Goessens site than is the case between the Bennett and Goessens sites. These relationships are based on the following assumptions: the Bennett and Goessens sites are the products of two separate developments (Pickering branch and Glen Meyer branch) and therefore should show the lowest relationship; the Uren site is a direct product of the Pickering branch and therefore should have its closest relationship with the Bennett site; and since there are assimilated Glen Meyer branch traits in the Uren site as a direct result of the conquest, the Uren site should show a higher relationship with the Goessens site than was the case between the Bennett and Goessens sites. The comparisons of the three sites upheld the hypothesized relationships with one predictable exception (Table 20).

A third but far more tenuous line of evidence, which may be mentioned in support of the proposed Glen Meyer branch conquest and the subsequent dispersal by the Pickering branch, is the equivocal data from the Youngs Tradition in southeastern Michigan, which may be interpreted as evidence of the adoption of Glen Meyer branch refugees into the Youngs Tradition.

REFERENCES

BORDEN, CHARLES E.

(1952). A uniform site designation scheme for Canada. *British Columbia Provincial Museum, Anthropology in British Columbia*, no. 3. Victoria.

BRAINERD, GEORGE W.

(1951). A place of chronological ordering in archaeological analysis. *American Antiquity*, vol. 16, no. 4. Salt Lake City.

CUTLER, HUGH C., and

LEONARD W. BLAKE

(n.d.) Corn from two prehistoric Ontario Iroquois sites, McIvor (BfFu-1) and Bennett (AiGx-1).

DONALDSON, WILLIAM S.

(1962). Archaeological research in the Rouge. *The Ontario Archaeological Society, series A*, no. 5. Toronto.

(1965a). The King's Forest Park site. *The Ontario Archaeological Society, series B*, no. 3. Toronto.

(1965b). The Elliot site. *The Ontario Archaeological Society, series B*, no. 3. Toronto.

FITTING, JAMES E.

(1965). Late Woodland cultures of southeastern Michigan. *University of Michigan, Anthropological Papers*, no. 24. Ann Arbor.

(1966). Radiocarbon dating the Younger Tradition. *In Facts and Comments, American Antiquity*, vol. 31, no. 5, part 1, p. 738. Salt Lake City.

KENYON, W. A.

(1959). A Late Woodland site near Pickering. *In New Pages of Prehistory, 1958. Ontario History*, vol. LI, no. 1. Toronto.

(1960). The Miller site—1959. *In New Pages of Prehistory, 1959. Ontario History*, vol. LII, no. 1. Toronto.

LEE, THOMAS E.

(1951). A preliminary report on an archaeological survey of southwestern Ontario in 1949. *National Museum of Canada Bulletin* 123. Ottawa.

(1952). A preliminary report on an archaeological survey of southwestern Ontario for 1950. *National Museum of Canada Bulletin* 126. Ottawa.

MACNEISH, RICHARD S.

(1952). Iroquois pottery types. *National Museum of Canada Bulletin* 124. Ottawa.

RIDLEY, FRANK

(1954). The Frank Bay site, Lake Nipissing, Ontario. *American Antiquity*, vol. 20, no. 1. Salt Lake City.

(1958). The Boys and Barrie sites. *The Ontario Archaeological Society, Publication no. 4*. Toronto.

RITCHIE, WILLIAM A.

(1961). A typology and nomenclature for New York projectile points. *New York State Museum and Science Service, Bulletin* 384. Albany.

WHITE, MARIAN E.

(1961). Iroquois culture history in the Niagara Frontier area of New York State. *University of Michigan, Anthropological Papers*, no. 16. Ann Arbor.

WINTENBERG, W. J.

(1928). Uren prehistoric village site, Oxford County, Ontario. *National Museum of Canada Bulletin* 51. Ottawa.

WRIGHT, J. V.

(1966). The Ontario Iroquois Tradition. *National Museum of Canada Bulletin* 210. Ottawa.

(1967). Type and attribute analysis: their application to Iroquois culture history. *In Iroquois Culture, History and Prehistory, Proceedings of the 1965 Conference on Iroquois Research, New York State Museum and Science Service*. Albany.

PLATES I TO XVII
INCLUSIVE

PLATE I

Fig.

- a Burial 2
- b Burial 3
- c Lower limbs of burial 3
- d Burial 4

PLATE I



a



b



c



d

PLATE II

Fig.

- | | |
|---|-----------|
| a | Burial 5 |
| b | Burial 8 |
| c | Burial 9 |
| d | Burial 10 |

PLATE II



a



b



c



d

PLATE III

Fig.

- a Burials 9 and 10
- b Burial 11
- c Burial 12 in head of pit 32 with additional femur in foreground
- d Burial 13 in bottom of pit 41 with additional femur to the left

PLATE III



a



b



c



d

PLATE IV

Fig.

- a Dog burial
- b View along the north wall of house structure 1, looking towards the northeast corner of the house
Excavated pit in the foreground contained burial 3
- c General view of unit E looking northeast at post concentration of house structure 2
- d General view of unit B looking north shows the stripping technique and the outlined interior central hearths and pits of house structure 3

PLATE IV



a



b



c



d

PLATE V

Fig.

- a Double palisade wall at end of test Trench 3 with possible third line of reinforcing stakes to the left
- b General view of unit B looking east shows an isolated line of posts
Excavation of pit 32 begun, on the left
- c Numerous small pits to the north of the central hearth in house structure 1, looking approximately south
- d Pear-shaped pit (pit 40)

PLATE V



a



b



c



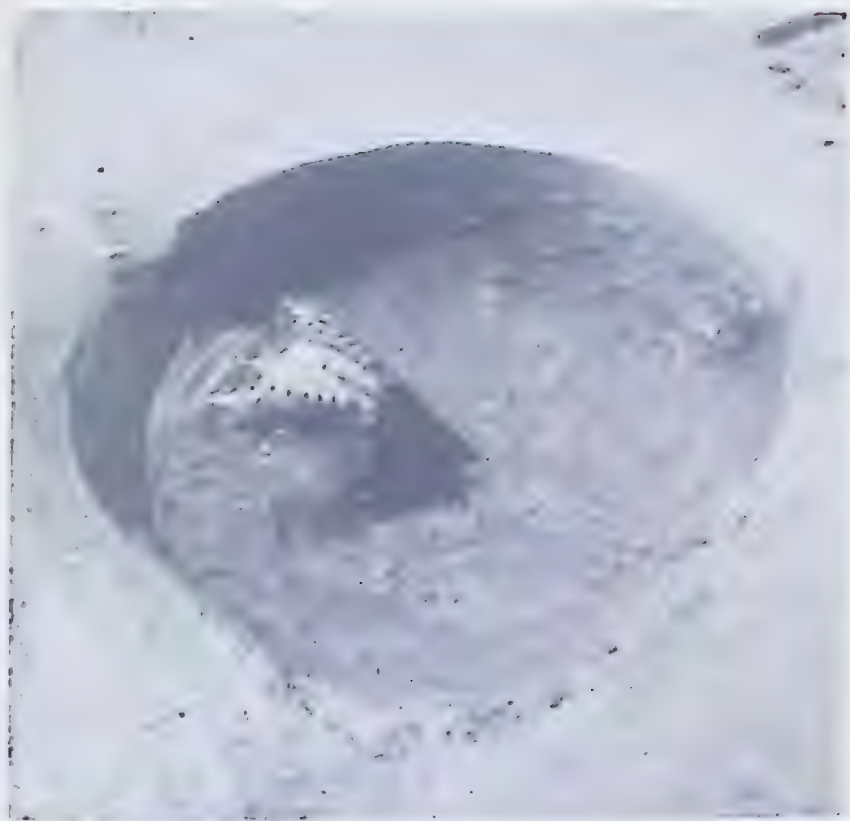
d

PLATE VI

Fig.

- a Deer skull in pit 19, unit D
- b Pot concentration 3, unit B
- c Profile view of base of pot concentration 3 after removal of vessel
- d Cache of three unfinished celts, unit A

PLATE VI



a



b



c



d

PLATE VII
($\frac{1}{2}$ natural size)

Fig.
a-h Push-pull rim sherds

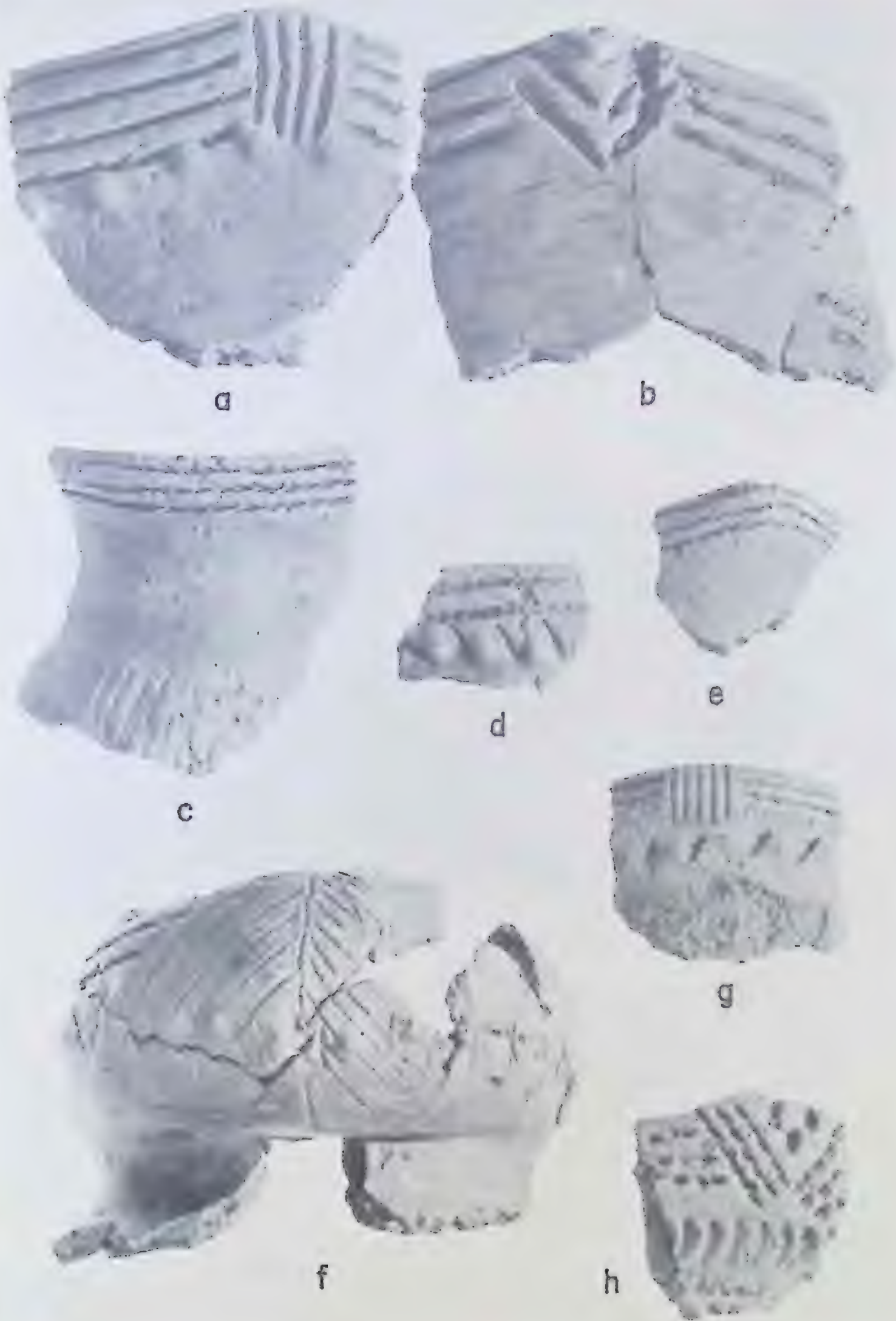


PLATE VIII
($\frac{1}{2}$ natural size)

Fig.

a-f Push-pull rim sherds



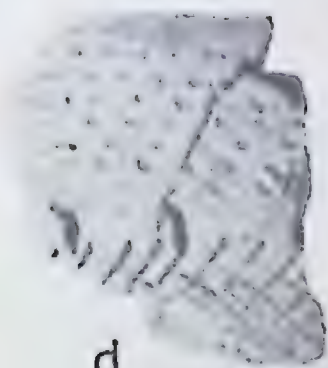
a



b



c



d



e

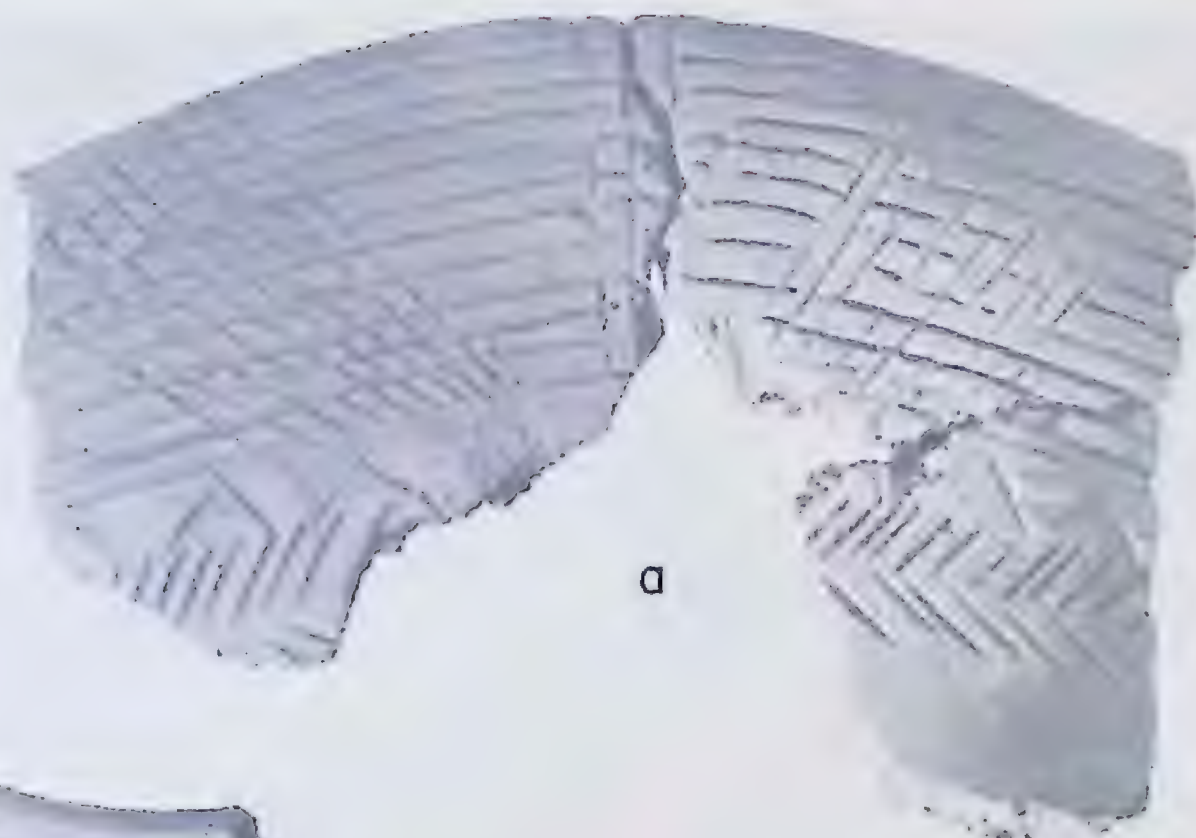


f

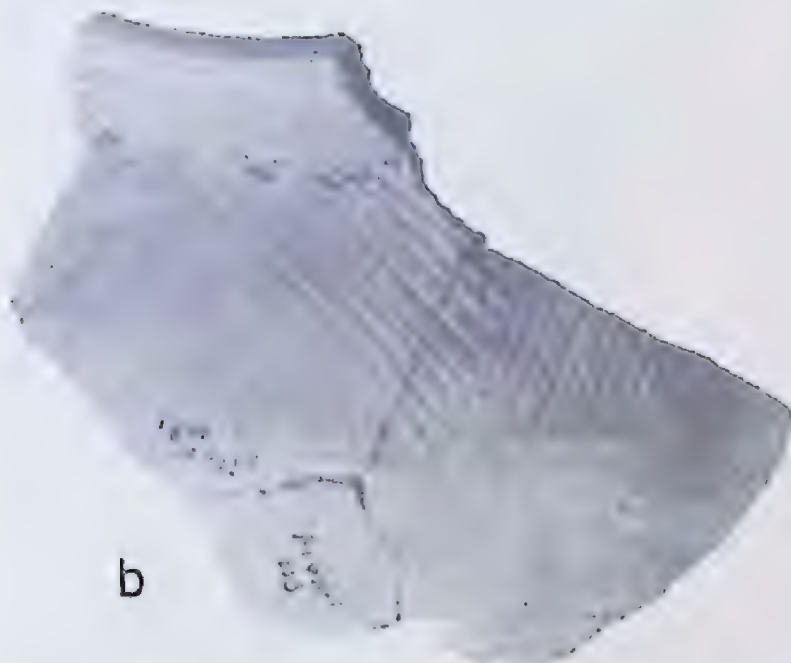
PLATE IX
($\frac{1}{2}$ natural size)

Fig.

a-f Incised rim sherds



a



b



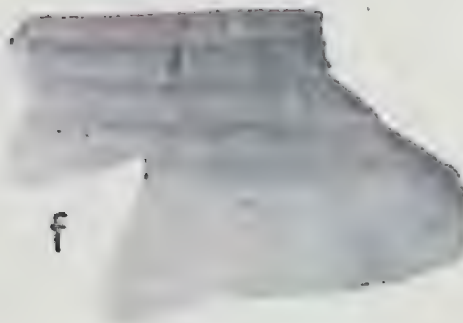
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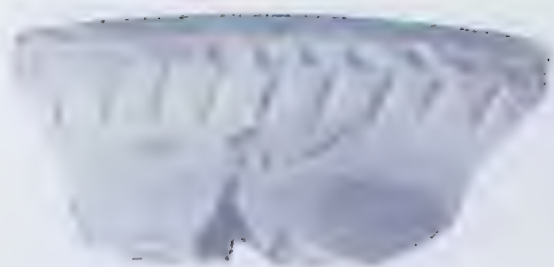


f

PLATE X
($\frac{1}{2}$ natural size)

Fig.

a-j Rim sherds with combined decorative techniques



a



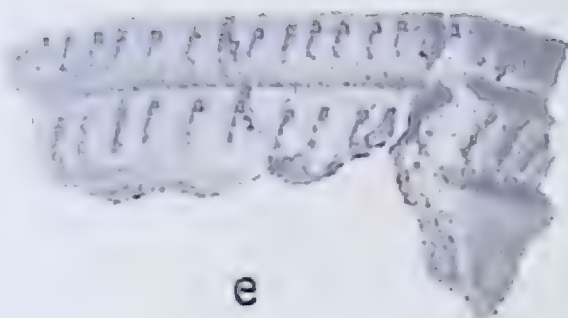
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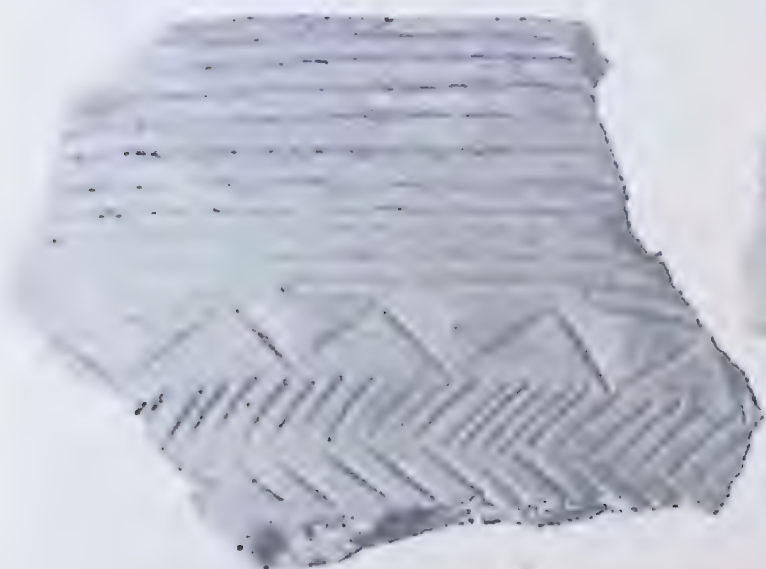
c



d



e



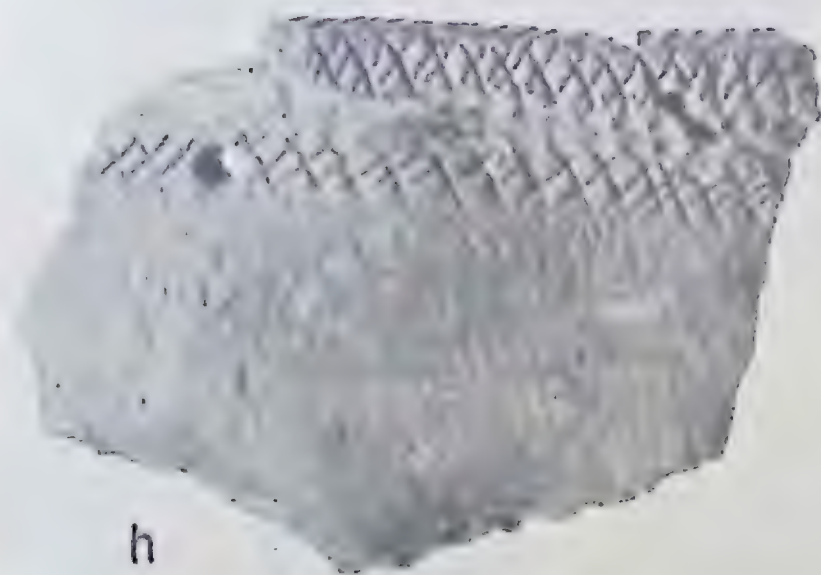
f



g



i



h



j

PLATE XI
($\frac{1}{2}$ natural size)

Fig.

- a-d Punctate rim sherds
- e-j Linear stamped rim sherds

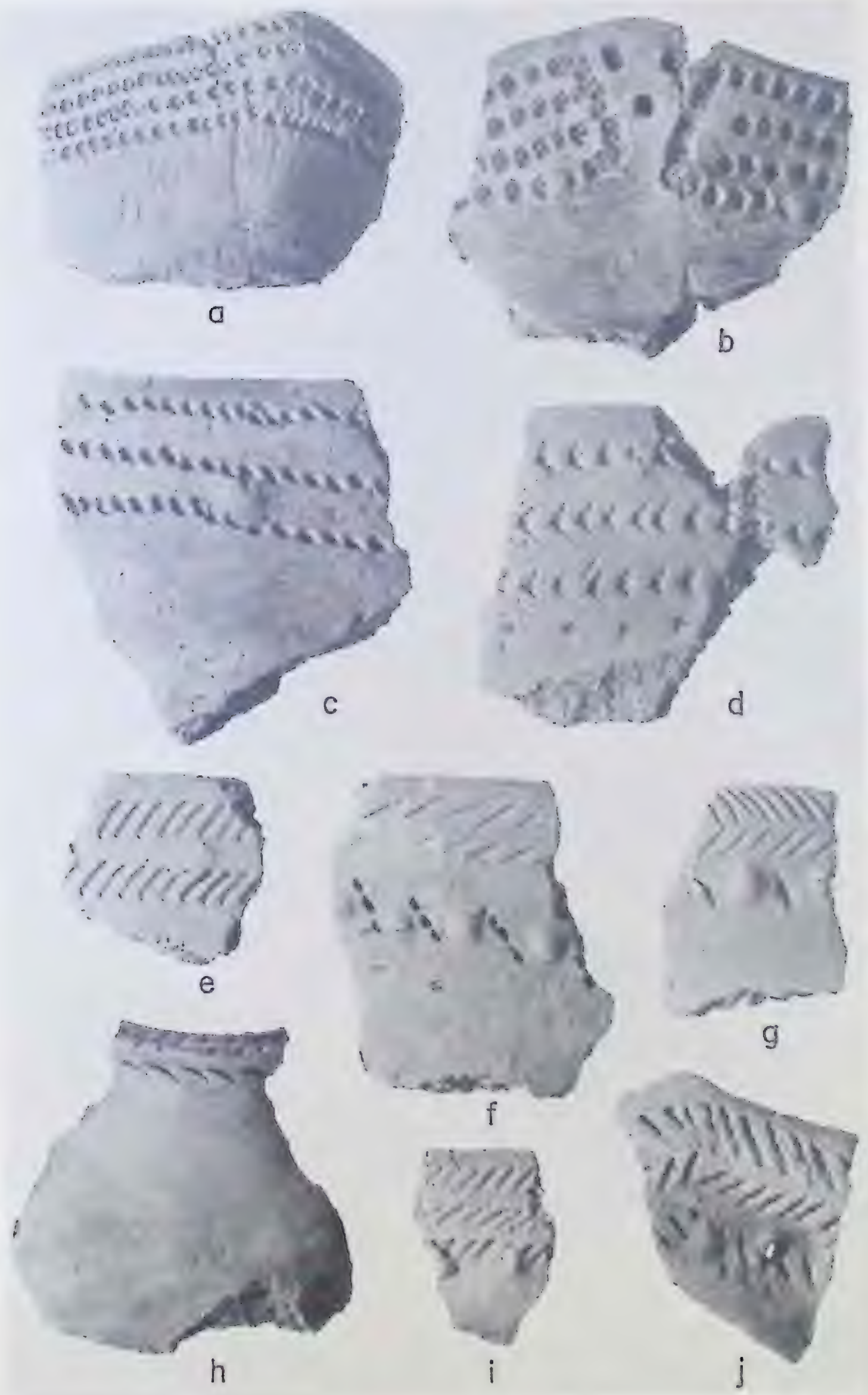


PLATE XII
($\frac{1}{2}$ natural size)

Fig.

- a-d Dentate stamped rim sherds
- e-g Dragged stamp rim sherds
- h, i Plain rim sherds



a



b



c



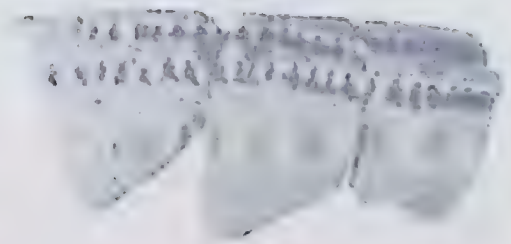
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e



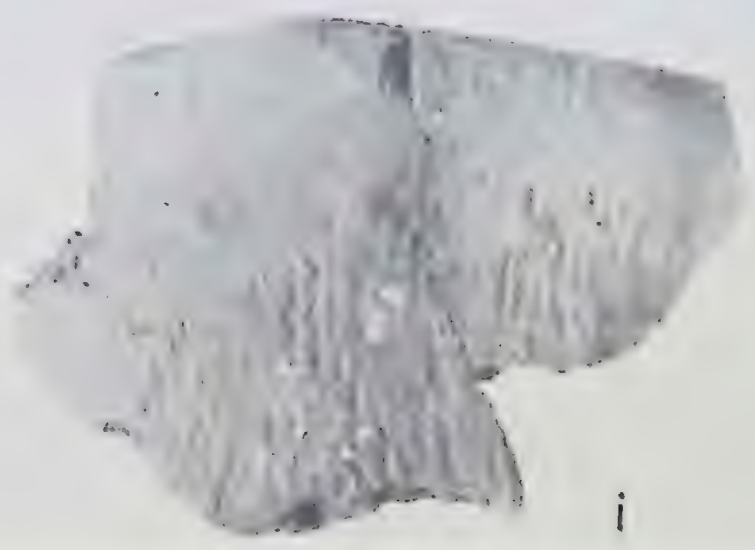
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g



h

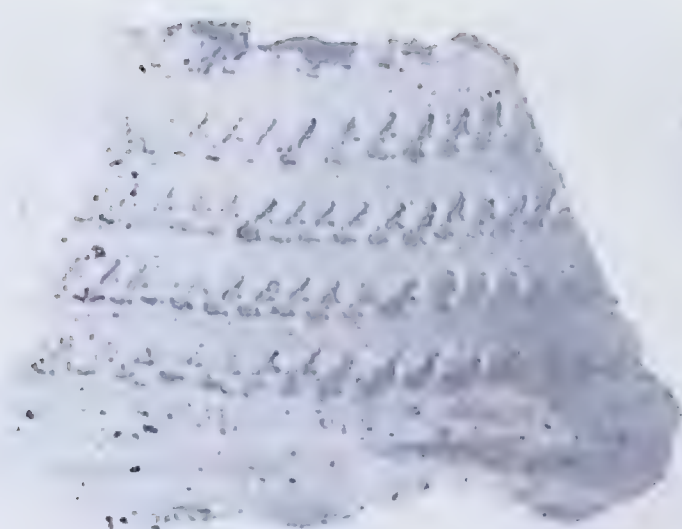


i

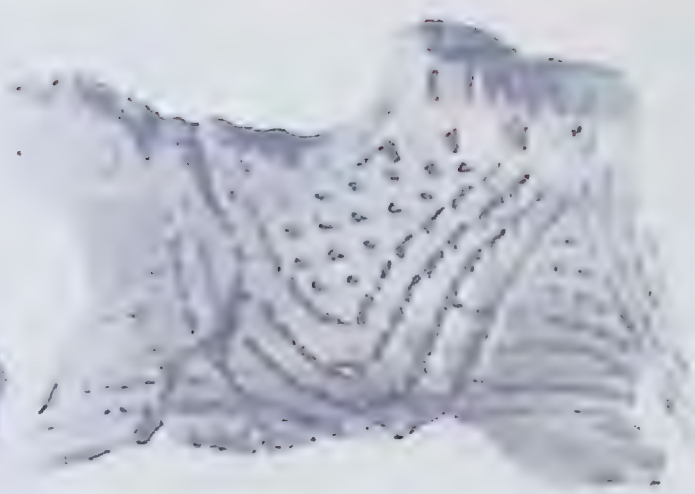
PLATE XIII
($\frac{1}{2}$ natural size)

Fig.

- a-e Decorated neck sherds
- f Shoulder sherd with plain neck and check stamped body
- g, h Shoulder sherds with smooth necks and ribbed paddle impressed bodies
- i Shoulder sherd with smooth neck and smoothed-over cord body
- j Scarified body sherd
- k, l Neck sherds with band of black paint



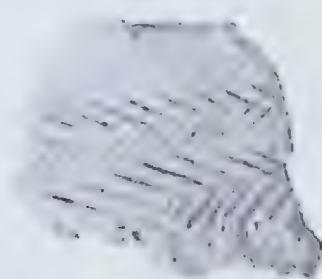
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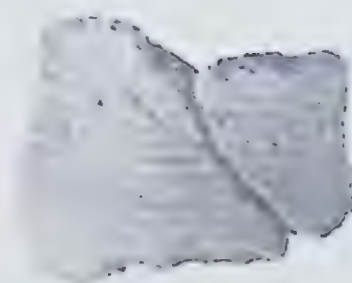
b



c



d



e



f



g



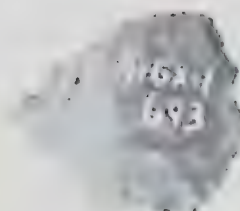
h



i



j



k



l

PLATE XIV
($\frac{1}{2}$ natural size)

Fig.

- a-j Juvenile vessel rim sherds
- k-o Pottery gaming discs
- p-s Relatively complete pipes
- t-w Pipe bowl and pipe bowl fragments
- x-aa Pipe stem and pipe stem fragments



PLATE XV
($\frac{1}{2}$ natural size)

Fig.

- a-k Arrowheads
- l Biface blade
- m Base of a biface blade
- n-w End scrapers
- x-dd Side scrapers
- ee, ff Random flake scrapers
- gg Circular scraper
- hh Saw (?)
- ii-oo Wedges



PLATE XVI
($\frac{1}{2}$ natural size)

Fig.

- a-c Adzes
- d Chisel
- e Ground slate object
- f Interior lateral view of a steatite bead fragment
- g Red ochre nodules
- h Rim fragment of a steatite pipe bowl
- i, j Abraders
- k Anvil stone
- l, m Hammerstones



PLATE XVII
($\frac{1}{2}$ natural size)

Fig.

- | | |
|-----------|--|
| a, b, d-g | Bone awls |
| h | Conical antler arrowhead |
| i-k | Problematical bone and antler objects |
| l | Antler flaker (?) |
| m, n | Beaver incisor chisels |
| o, p | Bone beads |
| q | Antler awl |
| r | Striated and polished rib |
| s, t | Cup-and-pin game deer phalanges |
| u, v | Deer phalanges with proximal articulation face removed |
| w | Antler handle |
| x | Bone chisel |
| y | End of etched bone bracelet with lashing hole |
| z, aa | Worked clam shells |
| bb | Crinoid stem bead and native copper bead |



PART II
OSTEOLOGY OF THE BENNETT SITE

by
J. E. Anderson

Résumé

Même s'ils ne constituent qu'un échantillon peu considérable, les quinze squelettes découverts au site Bennett nous permettent de connaître davantage les caractéristiques morphologiques des anciens habitants de l'Ontario. Leur valeur s'accroîtra lorsque d'autres données relatives à cette époque nous permettront d'établir des comparaisons. À l'heure actuelle, nous pouvons faire les trois constatations suivantes:

a) Les données métriques et morphologiques démontrent une grande ressemblance avec le type physique des Iroquois de l'Ontario qui existaient à la fin de l'époque préhistorique. L'analyse des variations squelettiques porte à croire qu'ils sont principalement apparentés, du point de vue biologique, aux squelettes remontant à la dernière partie du sylvicole qui ont été découverts dans des fosses séparées à l'emplacement du Serpent Mound (Anderson 1968).

b) Le nombre considérable de caries et l'usure modérée des dents permettent de conclure que leur alimentation provenait de l'agriculture.

c) Un excellent spécimen du mal de Pott confirme l'existence de la tuberculose au Nouveau Monde à l'époque précolombienne.

Introduction

Fifteen skeletons were excavated at the Bennett site in 1962 by a National Museum of Canada field party under the direction of Dr. James V. Wright. Six skeletons are those of children. Of the nine adult skeletons four are males, three are females, and two are of indeterminate sex. The ages and sexes of the skeletons are summarized in Table 1.

The bone generally was well preserved, but many specimens had been damaged by ploughing.

The measurement techniques used are those described by Ashley Montagu (1960). The method of Trotter and Gleser (1958) is used for stature estimation.

TABLE 1—*Summary of ages and sexes of skeletons*

Burial No.	Age	Sex
1	10 years	?
2	2 years +	?
3	Old adult	Male
4	Adult	Male
5-1	Adult	Female
5-2	Adult	?
6	Adult	Male
7	6 years	?
8	25 years	Female
9-1	3 years	?
9-2	Adult	?
10	6 years	?
11	6 years	?
12	Young adult	Male
13	Adult	Female

BURIAL DESCRIPTIONS

Burial 1

Burial 1 is the skeleton of a ten-year-old child excavated in the fall of 1961 by Dr. J. N. Emerson of the University of Toronto.

The spheno-occipital synchondrosis is open, and no limb epiphysis has yet fused to its shaft.

There are no cranial anomalies. The shaft of the humerus, not including epiphyses, measures 221 millimetres in length. Neither humerus has a septal aperture.

The second permanent molar tooth is in the process of eruption. The deciduous teeth still present show very slight wear of the enamel. Caries is present in pits and fissures on the upper left second deciduous molar and on the occlusal surface of the lower left first permanent molar.

Burial 2

Burial 2 is the skeleton of a child slightly over two years of age. The body had been buried in the flexed position on its left side with its hands near its face.

Age estimate is based on the following criteria: The full deciduous dentition is in place with only very slight wear of the cusps. The tympanic plate has formed around a central foramen but has not yet grown to its full lateral length. The squamous part of the occipital bone has fused to its condylar part, but there is no fusion of the condylar part to the basiocciput, and the spheno-occipital synchondrosis is still open. There are no fused limb epiphyses, and the innominate bone is still in three parts.

Most of the skull is present, but the reconstruction is considerably distorted. There is a supraorbital notch on each side, and there are multiple mandibular foramina on the left side. The left posterior condylar foramen is absent. There are neither pterygoid nor clinoid anomalies. In the facial region there is a malar tuberosity, a zygomaxillary tuberosity, and a marginal tubercle, but all are small. The subnasal region is blurred. A palatine torus is present in the form of a low ridge, and the transverse palatine suture is straight. There is no thickening of the tympanic plate, and the bilateral dehiscences represent a developmental stage. The chin region is of the median form, and the mandible shows no torus, gonial eversion, nor mylohyoid arch.

The anterior arch of the atlas has not yet fused. The body of the axis has not fused to the arch, the dens has not fused to the body, and the os apicis is still a discrete bone. There is a double foramen transversarium on the right side of both C6 and C7. Throughout the vertebral column the halves of the neural arches have fused to each other but not to the centrum.

Burial 3

An old adult male had been buried in a dismembered condition with the arms flexed and the right arm on the left side and the left arm on the right side of the trunk, which in turn had been placed upon a bundle consisting of the bones of the lower limbs.

There is advanced attrition of all the teeth remaining in the jaws. The occlusal surfaces had been worn flat exposing the dentin and causing, in five cases, an opening into the pulp chamber that resulted in alveolar abscesses. In two other teeth there is exposure of the pulp chamber caused by advanced caries. Alveolar abscesses are present around the roots of eight teeth. During the life of the individual, seven teeth had been lost, and the infected alveolar process has been partially resorbed. The upper left-central incisor is represented by a retained root only. The lower right second molar had been lost long before death; its alveolus has been resorbed, and the third molar has tilted mesially into its space.

Because of suture obliteration, no Wormian bone could be found. There is a parietal foramen on the right side but not on the left. There are supra-orbital notches on both sides but no multiple foramina on the face nor at the base of the skull. There is no sagittal crest, no metopic suture, and no supraorbital grooves. The brow ridges are well marked and take the form of a V. There is a malar tuberosity and a marginal tubercle but no zygomaxillary tuberosity. The nasal bones are rectangular with a slight distal flare. They meet each other at an angular junction. The subnasal margin is sharply defined. The palate has a huge, mound-shaped torus. The occipital region is also in the form of a mound with a distinct inion. Neither mastoid process is notched; neither tympanic plate has a dehiscence. The supra-meatal crest is heavy and turns obliquely upwards.

The chin is of the bilateral form. There is no mandibular torus, and the gonial angle shows inversion. Mylohyoid arches occur on both sides of the mandible, with the mylohyoid groove beginning distal to the arch.

A septal aperture is present in the right humerus but not the left. Both femora show considerable torsion and a rugged lateral bulging of the upper part of the shaft. Third trochanters are present bilaterally. There is slight arthritic lipping of the articular eminence of the jaw joint. Four ribs show arthritis on tubercles and head. The dens facet of the atlas has peripheral lipping, and there is ossification of the apical ligament extending from the tip of the dens. Cervical vertebral anomalies consist only of stenosis of both foramina transversaria of C7. Laminal spurs are present on two mid-thoracic vertebrae. There is moderate osteophytosis of thoracic and lumbar vertebrae.

A round, depressed area one centimetre in diameter is found midway on the right coronal suture, but it does not involve the inner table of the skull.

In life, the man's stature was 174.1 ± 3.27 centimetres or 5 feet $8\frac{1}{2}$ inches.

Burial 4

What may originally have been a bundle burial has been disturbed by ploughing so that only the fragmentary remains of an adult, probably a male, were found.

Only a few fragments of the skull vault were recovered. Much of the mandible has been preserved, and it is of the 'rocker' form with slight gonial eversion on the right side.

There are a few pieces of burned bone.

Burial 5

This burial consists of two tightly-flexed adult skeletons in a poor state of preservation and badly damaged by ploughing.

Burial 5-1

Although pelvic criteria are not available for sex determination, all cranial indications are those of a female, and the diameter of the femoral head is only 39 mm.

There has been premortem loss of the upper right central incisor and of all six lower molars. The roots of the lower left third molars have been retained. There is only slight attrition of the upper first molars, but the anterior teeth are worn down exposing dentin. The facial region of the skull shows a small malar tuberosity and a medium marginal tubercle but no zygomaxillary tuberosity. The nasal bones are rectangular in shape and meet each other at an angular junction. There is a distinct margin to the subnasal region, and the occiput is mound shaped. The tympanic plates show no thickening and have no dehiscence. The chin region is medio-bilateral in form, and there is no eversion of the angle. Neither mandible nor palate has a torus.

The distal end of the right humerus is damaged, but the left side has a septal aperture. An anomalous articulation occurs between the left anterior tubercles of the fourth and fifth cervical vertebrae. A double foramen transversarium is present on the left side of the sixth cervical vertebra. Spurs are present in both foramina of the seventh cervical vertebra.

Burial 5-2

The sex of this individual could not be determined from the material available. Only fragmentary chips of vault and a partial mandible remain from the skull. The reconstructed mandible contains part of the mandibular dentition. Caries has destroyed the crowns of both second premolars. Early carious lesions are present in pits on the crowns of both first molars. The second and third right molars had been lost premortem. There is advanced arthritis of the jaw joints. The chin is bilateral in form, and the mental foramen is single.

Burial 6

Burial 6 yielded the badly fragmented and scattered remains of an adult male. Cranial sutures are still visible. Of the head skeleton only the skull vault and the mandible are present. There is a double right mandibular foramen. Attrition of the teeth had progressed to exposure of the dentin. Four molars had been lost premortem; the other two are represented only by retained roots. There is considerable arthritis of both jaw joints. In the few fragmentary vertebrae present there is some evidence of osteophytosis of the bodies.

Burial 7

This is the fragmented and scattered burial of a six-year-old child whose first permanent molar had just reached the occlusal plane. The lower left second deciduous molar has caries in an enamel pit on the crown. The left tympanic plate had grown to full lateral length, is rather thickened, and has a central dehiscence.

Burial 8

The skeleton of an adult female about 25 years of age was found in a tightly flexed position on its right side with the hands in the facial region.

The dentition shows only slight attrition. Both lower first molars had been lost premortem, and the alveolar process has been resorbed. Both lower second molars and the upper right second molar have carious lesions on the occlusal surfaces. There is slight mesial rotation of the upper central incisors.

The only accessory bones in the skull are a few Wormians in the lambdoid suture and a right asterionic bone. There are supraorbital notches on both sides, and on the right there is a triple supratrochlear foramen. The mandibular foramen is double on the right side only. The skull vault is rounded in contour with no sagittal crest and no metopic suture. The brow

ridges are V-shaped. The zygoma has a marginal tubercle but no malar and no zygomaxillary tuberosities. The rectangular nasal bones meet at an angular junction, and the subnasal region is sharply defined. The tympanic plates are not thickened but each has a dehiscence. The chin region is medio-bilateral in form, and there is no gonial eversion.

The infracranial skeleton is almost complete. There is no septal aperture, no third trochanter, and no vastus notch. Unfortunately, the right side of the atlas vertebra is damaged, but the left side has both lateral and posterior bony bridges over the groove for the vertebral artery. The foramen transversarium is double bilaterally on the sixth cervical vertebra and on the right side only of C5. Tiny spurs project into the left foramen transversarium of C7.

Burial 9

Burial 9 contained the bundle burial of an infant associated with parts of an adult skeleton.

Burial 9-1

An age estimate of 3 years was made on the basis of cranial development. The full deciduous dentition is present, and there are no signs of caries or attrition. Cranial anomalies include the following: a triple right mental foramen, left pterygo-spinous spurs, and a palatine torus forming a low mound for the full length of the hard palate. There are well-marked grooves for the supraorbital vessels and nerves on both sides of the frontal bone.

Burial 9-2

The right and left foot bones, patellae, scapulae, and clavicles of an adult were found in the grave. Osteoarthritis is present on both patellae and both glenoid fossae. Each patella also has a large vastus notch. On each talus there is a huge squatting facet on the neck and a lateral extension of the joint surface. The anterior and middle facets of the calcaneus form a single hourglass-shaped area.

Burial 10

A six-year-old child had been buried on its left side in a flexed position. All the deciduous teeth are present, and the first permanent molars had reached the occlusal plane. There are no signs of caries or attrition. An anterior bulging of the lambdoid suture suggests that a fontanellic bone had been present, but the posterior suture of it has been obliterated. The right supraorbital, both infraorbitals, and the right mandibular foramina are double. Each pterygoid plate has a large spur extending from its posterior margin almost to the spine of the sphenoid. There is a dehiscence in each tympanic plate.

The anterior arch of the atlas vertebrae has formed from two parts: the right half is fused to the lateral mass, but the left half remains discrete. The foramen transversarium is normal in all cervical vertebrae except C6, which has stenosis on the right side.

The most interesting variation in this skeleton is the presence of both a proximal and a distal epiphysis on the first metacarpals and on the first metatarsals.

Burial 11

The skeleton of a six-year-old child was found in a flexed position. Disturbance of its upper part has resulted in the loss of the skull and hand bones. The mandible is intact and shows the full complement of deciduous teeth and the fully erupted first permanent molars. There are no vertebral anomalies and no septal apertures. Both clavicles have large foramina for the passage of supraclavicular nerves.

Burial 12

A young adult male had been buried in a flexed position, crammed head-first into a refuse pit.

The teeth show only moderate attrition with exposure of dentin on the anterior teeth but with only blunting of the molar cusps. Six teeth are carious. Only the roots of two of these remain, and the crown of another consists only of an enamel shell. A small abscess had formed around the roots of this tooth, the first lower left molar. The third molar on the same side has rotated distally through forty-five degrees.

Tiny Wormian bones are present in the coronal, sagittal, and lambdoid sutures, and there is a left asterionic bone. The right mental foramen is double as are both infraorbital foramina. The supraorbital ridges are V-shaped, and the occiput is in the form of a mound. There is a dehiscence in each tympanic plate. The chin is of the medio-bilateral form, and there is no gonial eversion.

Septal apertures are present in both humeri. There is a third trochanter on each femur. On the left side, the head of the femur is flattened and shows extensive erosion. The acetabulum is greatly expanded to a diameter of 75 mm and shows widespread erosion of its articular surface and peripheral lipping. This is a case of healed ischemic necrosis of the proximal femoral epiphysis.

The most striking pathological condition found in this collection of skeletons involves the vertebral column of Burial 12. As may be seen in Plate V, all the thoracic vertebrae except the first had been attacked by a process that resulted in cavitation of the vertebral bodies and their ultimate destruction. The bodies of T2, 3, 4, and 5 are honeycombed with cyst-like cavities. T6, 7, 8, and 9 show complete destruction and collapse of their bodies and the resultant marked angular kyphosis. The segment of spine from T5 to T10 had fused into a single unit by a relatively smooth ossification of the ligaments between the neural arches. The body of T5 rests obliquely on the antero-superior aspect of the 10th thoracic body upon which it has produced an impression. The spectacular angulation of the spinal canal is less than 90 degrees. The 11th thoracic vertebra exhibits cavitation of the right posterior part of its body extending into the pedicle. Neither T12 nor the lumbar vertebrae are involved.

As I write this I have in front of me three vertebral columns with Pott's disease from the Department of Pathology at the University of Buffalo. The three specimens closely resemble the vertebral column of Burial 12. In fact, the Bennett site specimen is somewhat more typical of tuberculosis in that there is considerably less reaction to the destructive process.

Specimen A The entire thoracic column and the first four lumbar vertebrae are involved. Maximum destruction of bodies with collapse and fusion has occurred in the segment from T7 to L3. As well as fusion between the vertebral bodies, there is also ossification of the ligamenta flava and the interspinous ligaments.

Specimen B The area involved is less extensive, but destruction is maximum over the whole area. There has been collapse and fusion of the bodies of the 7th thoracic to the 3rd lumbar vertebrae. Fusion has occurred between the intervertebral ligaments and also by some new bone having formed an irregular layer on the lateral sides of the vertebral bodies.

Specimen C Here the area involved is from the 6th thoracic vertebra to the 2nd lumbar vertebra. Angulation reaches almost 45 degrees.

Burial 13

The body of an adult female had been buried on its back.

All the upper teeth but two had been lost premortem, and the alveolar process has been resorbed. The lower teeth are mainly carious and loose in their infected sockets. The remaining teeth show little attrition.

The lambdoid suture is a maze of Wormian bones, and a fontanellic bone extends anterior to the lambda. The supraorbital ridges are V-shaped, and there is an occipital mound. Dehiscences are present in both tympanic plates. The chin form is medio-bilateral, and there is no gonial eversion. A bony arch bridges both mylohyoid grooves.

The appearance of the symphysis pubis suggests an age of over 50 years. Slight degrees of arthritis affect most joints in the body. The limb bones appear to be delicate and slender. Occurring on both sides are septal apertures, incipient third trochanters, neck facets on the talus, and large vastus notches. The inferior angle of the scapula is surprisingly blunt for such a small, delicate bone. On the right side there is an accessory facet behind the auricular area of the ilium. The foramen transversarium of the sixth cervical vertebra is double bilaterally.

THE CRANIA

Craniometry of the five measurable adult skulls is summarized in Table 2.

Features shared by all the skulls include V-shaped brow ridges, rectangular nasal bones meeting at an angular junction, and a mound-shaped occiput. No skull has a sagittal keel, a metopic suture, or an Os Inca.

Half the infraorbital foramina have an accessory foramen superomedially. Only one-third of the frontal bones have grooves for the supraorbital vessels and nerves. The subnasal region is blurred in 43 per cent of cases. Three of

eight palates have well-developed palatine tori. The anterior form of the transverse palatine suture is slightly more common than the straight type. Only one of seventeen tympanic plates shows signs of thickening, but fifteen have a dehiscence. In the interiors of nine occipital bones the grooves for the superior sagittal sinus swing to the right in five and to the left in four.

There is no example of mandibular torus, and only Burial 10 shows gonial eversion. Of fourteen mylohyoid grooves, four (28%) have a bony arch over them. Of sixteen mental foramina, one is double and one is triple.

TABLE 2—Cranimetry

	Burial Numbers				
	3	5-1	8	12	13
	Male	Female	Female	Male	Female
Cranial length.....	186	167	166	184	169
Cranial breadth.....	143	132*	141	144	131
Basion-bregma.....	141	125	129	138	126
Cranial module.....	157	141*	145	155	142
Cranial index.....	76.9	79.0*	84.9	78.3	77.5
Auricular height.....	—	112	114	—	—
Minimum frontal.....	93	89	96	84	82
Length-height index.....	75.8	74.8	77.7	75	74.6
Breadth-height index.....	—	94.7*	91.5	95.8	96.2
Bizygomatic diameter.....	141*	—	125*	135	123
Total facial height.....	111	95	109	120	—
Facial index.....	78.7*	—	87.2*	88.9	—
Upper facial height.....	73	58*	67	77	—
Upper facial index.....	51.8*	—	53.6*	57.0	—
Nasal height.....	54	45	47	58	—
Nasal breadth.....	31*	25	21*	26	—
Nasal index.....	57.4*	55.6	44.7*	44.8*	—
Orbital height.....	35	32	34	36	32
Orbital breadth.....	46	38	41	45	41
Orbital index.....	76.2	84.2	82.9	80.0	78.0
Alveolar breadth.....	—	58	62	67	—
Alveolar length.....	—	—	49*	54*	—
Alveolar index.....	—	—	126.5	124.1	—
Basion-prosthion.....	99	100	91	103*	—
Basion-nasion.....	104	99	97	108	99
Ramus breadth.....	37	32	28	33	31
Symphysis height.....	—	25	30	32	—
Bigonial breadth.....	—	—	90	102	—
Ramus height.....	62	—	53	61	51

*Estimated.

THE DENTITION

The dental findings indicate a diet derived from an agricultural economy rather than from a hunting and gathering one. Except for Burial 3, an old adult, there is only slight to moderate attrition. Fourteen per cent of the 130 teeth in the adult jaws show caries. Some carious lesions had advanced

to destruction of the crown, exposure of the pulp chamber, and subsequent infection of the alveolar process. At 5.7 per cent of potential tooth sites, an abscess had formed. The percentage of teeth lost before death is 22.2.

In the jaws of immature individuals there are no signs of premortem tooth loss. Of fifty-five deciduous teeth, two have caries, and of twenty permanent teeth in a mixed dentition, only one has caries.

THE INFRACRANIAL SKELETON

Those measurements possible on the long bones of adult skeletons are summarized in Table 3. Stature could be estimated for only four individuals. The height of each of two males was approximately 5 feet 9 inches, and the heights of the two females were 5 feet 2 inches and 5 feet 4 inches.

Thirty-nine per cent of eighteen humeri have septal apertures, and thirty-seven per cent of sixteen femora have third trochanters. Four of the six patellae have well marked vastus notches. The anterior and middle facets are separate in one-third of the twelve calcanei. Two-thirds of the vertebral columns have anomalies of the foramen transversarium, and one atlas vertebra has a bony bridge over the vertebral artery grooves. Two noteworthy anomalies are the paired supraclavicular foramina of Burial 11 and the pseudoepiphyses of Burial 10.

TABLE 3—*Infracranial measurements*

	Burial Numbers					
	3	5-1	5-2	8	12	13
	Male	Female	?	Female	Male	Female
Clavicle length					165*	131
Humerus: head: max.				42	52	36
Humerus: head: min.				39	43	36
Humerus: length				273	341	291
Radius: head					24	20
Radius: length				216	264	235
Femur: head	48*	39*			50*	41
Femur: length				403		404
Femur:						
subtrochanteric						
A P	26	20	22			21
Lat.	38	27	31			31
Platymetric index	68.4	74.2	71.0			67.8
Tibia: length	388					345
A P	36			21*		31
Lat.	22			29*		17
Platynemic index	61.2			72.4*		54.8
Fibula length				313		333
Stature (cm)	174.2			157.6	175.9	161.7
	±3.3			±3.18	±4.2	±3.2
Stature (in.)	68.6			62.0	69.2	63.7

*Estimated.

PATHOLOGY

The only evidence of trauma is the healed skull fracture of Burial 3; the outer table had been depressed but the inner table had not been involved. Dental pathology is reflected in the frequency of arthritis of the jaw joint. Although there are no severe cases, degenerative joint disease is present in the older individuals. The most spectacular pathological condition is the Pott's Disease of Burial 12, another example of pre-Columbian tuberculosis. There is a temptation to consider the unilateral hip disease of the same individual as a case of tuberculous arthritis. Although the material is fragmentary, there is sufficient evidence to make a diagnosis of healed ischemic necrosis of the proximal femoral epiphysis.

SUMMARY AND CONCLUSIONS

Although the sample is small, these fifteen skeletons help to fill the wide gaps in our knowledge of the morphological features of the early inhabitants of Ontario. The value of these skeletons will increase as more comparative data become available from their time level. Three brief points may be made at this time:

- (a) Metrical and morphological data show a great similarity to the physical type of late prehistoric Ontario Iroquois. Evaluation of the skeletal variations present suggests that their closest biological affinity is with the Late Woodland skeletons from pit burials at the Serpent Mounds site (Anderson 1968).
- (b) the high incidence of caries and the moderate degree of dental attrition suggest the diet of an agricultural economy.
- (c) An excellent example of Pott's Disease confirms the pre-Columbian presence of tuberculosis in the New World.

REFERENCES

ANDERSON, J. E.

(1968). The Serpent Mounds site. Physical Anthropology. Royal Ontario Museum, Toronto.

ASHLEY MONTAGU, M. F.

(1960). A handbook of Anthropometry. Charles C. Thomas, Springfield.

TROTTER, M., and G. GLESER

(1958). A re-evaluation of estimation of stature. American Journal of Physical Anthropology, n.s. 16: 79.

PLATES I TO V
INCLUSIVE

PLATE I

Front and right lateral views of the skull of Burial 12, an adult male. Craniometric values are given for this skull in Table 2. The supraorbital ridges are V-shaped and do not blend with the superior orbital margin. The occipital pole of the skull forms a low mound. There is no sagittal elevation or gonial eversion. The tympanic plate is thin. A double mental foramen occurs on the right side.

PLATE I



PLATE II

Front and right lateral views of the reconstructed skull of Burial 3, an old male. Notice the marked dental attrition and the numerous alveolar abscesses. A marker shows the small depressed fracture of the skull vault midway along the right coronal suture.

PLATE II



PLATE III

- A The dentition of Burial 13 shows premortem tooth loss with alveolar resorption. Caries has begun in enamel pits on the remaining molar teeth.
- B The upper dental arch of Burial 3, an old male. There is advanced attrition and caries. On the left side, the alveolar process is infected and partly resorbed following tooth loss. There is a large palatine torus.

A



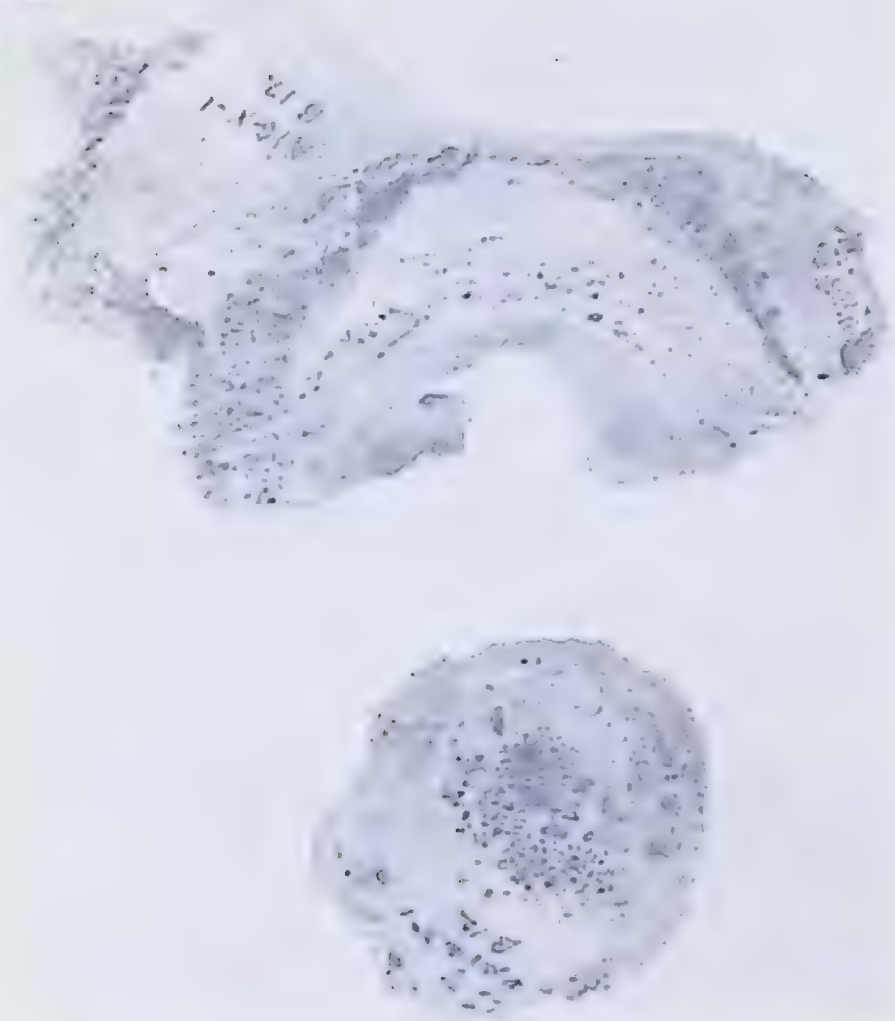
B



PLATE IV

- A The fragmentary left hip joint of Burial 12, a young adult male. There is flattening and erosion of the femoral head and a shallow expanded and eroded acetabulum. These are the sequelae of ischemic necrosis of the proximal femoral epiphysis that occurred probably during adolescence.
- B The first metacarpals and metatarsals of Burial 10, a six-year-old child. Each shows the presence of both a proximal and a distal epiphysis.
- C The right and left clavicles of Burial 11, another six-year-old child. Markers pass through the prominent foramina for the supraclavicular nerves.
- D Fragments of the vertebral ends of three ribs from Burial 13 showing arthritic destruction.

A



B



C



D



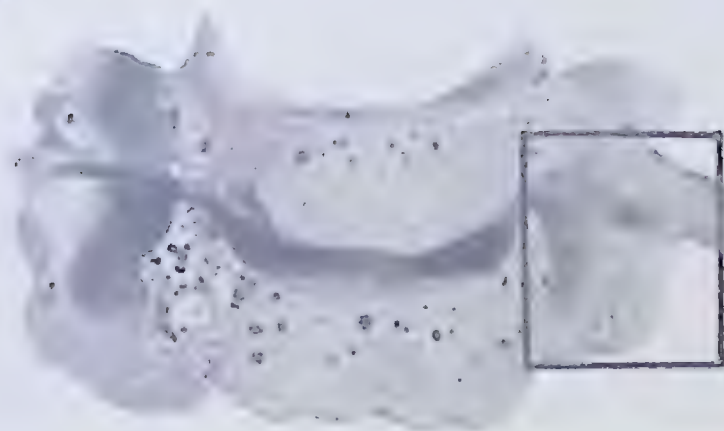
PLATE V

- A Superior view of the atlas vertebra from Burial 10, a six-year-old child. There is a wide cleft in the midline separating the two individually developed halves of the anterior arch. The right half had fused to the lateral mass, but the left half had remained discrete.
- B Anterior view of the fourth and fifth cervical vertebrae from Burial 5-1 showing the anomalous articulation between the left anterior tubercles.
- C Right lateral view of the articulated thoracolumbar segment of the vertebral column from Burial 12. Tuberculous cavitation of vertebral bodies had led to their collapse and to the angular kyphosis.

A



B



C



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